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Special Issue Editor

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SPECIAL ISSUE

LETTER FROM THE EDITOR

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Balasundram Maniam, Special Issue Editor
Sam Houston State University

MUTUAL FUND PERFORMANCE IN EXTREME MARKET STATES: A CASE FOR ACTIVE MANAGEMENT

Steve A. Nenninger, Sam Houston State University

ABSTRACT

In this paper I examine mutual fund performance separately for good and bad market states to test whether mutual funds perform differently depending upon market conditions. Previous research has provided conflicting reports of performance. One line of research reports better performance during recessionary periods, but another shows that investment flows are more sensitive to the performance of the extreme top tier of funds. I find support for both theories in that actively managed mutual funds outperform index funds on a risk adjusted bases at both high and low market extremes. I also separately analyze performance assuming individual funds are part of a larger, more complete portfolio. Results for the portfolios of funds are very similar to those of the individual funds.

INTRODUCTION

Beginning with Jensen (1968), research has questioned the value added by the active management of mutual funds. Despite evidence that actively managed mutual funds tend to underperform passive investments, investors continue to pour money into actively managed funds, and the number of funds available continues to grow. By the end of 2007, over $12 trillion was invested in more than 10,000 different mutual funds (2008 ICI Fact Book), with the majority under active management.

Most studies imply that investors are better off investing in a passive index fund rather than an actively managed fund. However, there are other factors to consider when studying actual individual investor performance. First, studies that examine the holdings of actively managed funds reveal that investment managers do make value enhancing decisions concerning the trades of portfolio assets (Taylor and Yoder (1994), Grinblatt and Tittman (1994), and Wermers 2000). It appears that managers possess a special set of skills or resources that allows them to make "better than market" buy and sell decisions. However, on average, the value created is not generally great enough to offset the fees charged (Guber (1996) Wermers (2000)). This implies that either skilled managers do not actually add value, or that the correct measures of value are not being tested.

Performance may also be dependent upon the current state of the investing environment. Research along these lines has produced two main findings that potentially conflict. First, actively managed funds tend to perform better during recessionary periods (Kosowski (2006), Glode (2007)). Investment advisors may claim that the diversity and professional stock selection available through actively managed funds provides investors a degree of protection against a falling market. However, it has also been shown that mutual fund asset flows are more sensitive to performance when fund return is higher: more money moves into top performing funds than moves out of poorly performing funds (Ippalito (1992), Chevalier and Ellison (1997), and Sirri and Tufano (1998)). This presents a dilemma to fund managers: do investors desire a portfolio which protects against down markets or one which capitalizes on strong markets. While testing investor intentions is beyond the scope of this paper, I examine fund performance during both good and bad market states.

A third significant issue addressed here is that the majority of articles examine performance on a fund by fund basis. This assumes that investors are looking for only one fund for investment. In reality, investors generally invest in several funds, and the median number of funds held by an individual investor is four (2008 ICI Fact Book). In this paper, I examine performance both on an individual fund basis, and by forming diversified 4-fund portfolios to examine whether a combination of actively managed funds exhibits different characteristics than individual funds held in isolation.

As a result, this paper makes three specific contributions to the existing literature: 1) fund performance is examined in good and bad market states separately; 2) actively managed and index fund are compared directly during each state; and 3) the performance of a diversified 4-fund portfolio is tested against index funds.

LITERATURE REVIEW

With over $12 trillion in assets under management at the end of 2007, the mutual fund industry represents a major sector of the financial institutions industry. Investment companies manage 23% of household financial assets, up from 8% in 1990, and nearly half of US households hold mutual fund investments (2008 ICI Fact Book). With the popularity of mutual funds comes close scrutiny from both financial professionals and the academic community. While all mutual funds provide the advantages of diversification, record keeping, and liquidity, a potential advantage that has been the subject of debate is professional stock selection available through actively managed mutual funds.

Many studies have questioned the value added by the active management of mutual funds. Jensen (1968) finds only 3 of 115 funds have a positive risk-adjusted return, even before accounting for sales charges. Carhart (1997) and Gruber (1996) both advance the study of mutual funds by developing 4-factor performance models. In addition to beta used by Jensen, Carhart adds factors for investing in large vs. small market capitalization stocks, growth vs. value stocks, and momentum

vs. contrarian investment styles. He finds any persistence in performance can be explained by either low expenses or by luck associated with holding past outperforming stocks. Gruber (1996) finds that risk-adjusted returns are negative, but smaller in absolute value than fees, which implies that portfolio managers add value, but then charge more than it's worth.

Other studies provide evidence of fund manager skill. Taylor and Yoder (1994) and Grinblatt and Tittman (1994) find that high turnover funds outperform low turnover funds, suggesting that the more active a manager is, the more value he may add. Further, Kacperczyk, Sailm, and Zheng (2005) find that more concentrated funds perform better after controlling for risk and style differences, indicating fund managers may benefit from a specialization in a particular area.

Another branch of literature examines the performance of the holdings of mutual funds rather than the funds as a whole. Daniel, Grinblatt, Titman, and Wermers (1997) examine the holdings of 2500 funds from 1974 to 1994, and find that mutual funds exhibit some stock selection ability. The average mutual fund outperforms simple index strategies, but the outperformance is approximately equal to the management fee. Wermers (2000) also decomposes fund returns to examine stock holding returns only. He finds that funds hold stocks that outperform the CRSP value-weighted index, but net returns underperform due to non-stock holdings, expenses, and transactions costs. Investors, in essence, pay for the convenience of liquidity within the fund provided by non-stock holdings.

Research examining performance under different economic or market conditions produces potentially contradictory results. Kosowski (2006) and Glode (2007) find that risk adjusted returns are negative during expansion periods, but positive during recessionary periods. This may suggest that fund managers structure portfolios to avoid steep losses during down markets. This follows Kahneman and Tversky's (1979) prospect theory, which states in part that the pain of a loss is greater than the joy of a gain. However, there is also a well documented positive relation between past returns and asset flows, and the intensity is much greater for the top performers (Ippalito (1992), Chevalier and Ellison (1997), and Sirri and Tufano (1998)). Investors put larger amounts into top performing funds (i.e. chase returns), but there is only a small difference between flows to mediocre and to very poor funds. This would encourage fund managers to attempt to earn the very highest returns during the good states of the market, with the potential reward of increased flows and only a small degree of potential punishment in terms of outflows for poor performance. These conflicting findings lead to the first research question addressed in this paper: is there a difference in mutual fund return in good and bad states of the market? I examine fund performance in different states in order to find which theory best explains investment results, and I find that active funds tend to outperform index funds in both good and bad market extremes, which lends support to both ideas.

Nearly all studies of mutual funds examine performance on a fund by fund basis. One exception is O'Neal (1997), who finds that a portfolio with four growth funds cuts in half the dispersion in terminal-period wealth. Additionally, the 2008 ICI Fact Book reveals that the median

number of funds held by individuals is four. These facts lead to the second research question examined in this paper: is the performance of a 4-fund portfolio of mutual funds differently than that of index funds? Rather than look solely at individual fund performance, I construct diversified portfolios of mutual funds which may mimic those of typical investors. I use the popular Morningstar classifications of large cap growth, large cap value, small cap growth and small cap value to construct diversified mutual fund portfolios. As with individual funds, performance is examined separately for good and bad states of the market, with the expectation that portfolios provide more protection against low returns during bad states. I find that risk adjusted returns for a diversified portfolio of four funds is higher during both market extremes.

HYPOTHESIS DEVELOPMENT

Mutual funds are designed to optimize an investor's return, meaning maximum return commensurate with the risk assumed (Bogle 1970). All mutual funds have the advantages of record keeping, low transaction costs, and diversification, and actively managed funds have the additional feature (and potential advantage) of professional stock selection. The question addressed here is whether actively managed funds best fulfill the charge of return optimization. For investors desiring exposure to the stock market, the issue is not whether to purchase mutual funds, but rather which types of funds to purchase. Literature implies that investors will be better off with an index fund due to generally lower fees and similar or better performance than actively managed funds. I re-examine this idea using data from mutual funds from 2003 through 2007. The first hypothesis is:

H1: The risk adjusted returns of actively managed funds and index funds are different in good and bad market states.

While risk adjusted returns have been analyzed often, to my knowledge this is the first study to directly compare the risk-adjusted performance of active vs. index funds while segmenting the market into good and bad states. This is important because investors' expectations of fund performance may be conditional upon market states. It has been shown that investment managers have skill in stock selection, but either the expenses associated with achieving and maintaining that skill are greater than the value added, or we may not be measuring what managers are actually attempting to accomplish.

I assume that investors expect to earn at least the average stock market return each year. By definition, in good states investors are earning an above average positive return, so they should be satisfied. In bad states, however, returns are below average and therefore below expectations. My proposal is that investors may value performance more during bad states, and managers therefore structure portfolios that mitigate losses during these bad states at the expense of sacrificing higher returns during good states.

Further, since investors typically hold a collection of funds, it will be useful to examine performance not just on a fund by fund basis, but also on how an average portfolio of funds may perform. This leads to the next hypothesis:

H2: The risk adjusted return of a diversified portfolio of active funds is different from that of a portfolio of index funds in good and bad states of the market.

Portfolio managers use their unique set of skills to attempt to add value in their particular style of investment. While no one particular style consistently outperforms, an individual invested in the best ideas of different styles at all times may be better off on a risk adjusted basis over both the long- and short-term, regardless of which style outperforms in a particular year. This corresponds with the idea that fund managers have stock selection ability, but no timing ability.

DATA

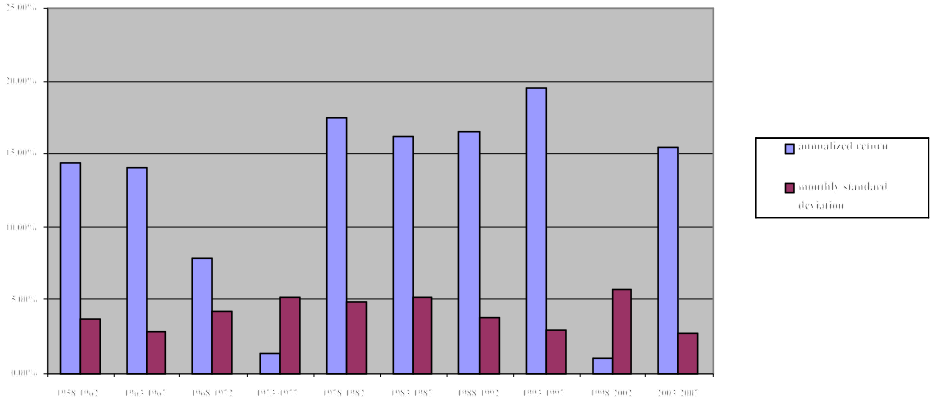
Data is compiled from the CRSP survivor-bias free mutual fund database for the period of January 2003 through December 2007. I also use Morningstar Principia as of December 2007 for fund category information. I examine the monthly net returns inclusive of management fees of domestic equity funds, excluding sector funds. To be included in the sample, a fund must have monthly return data in CRSP for the 60 months of the sample period and must also be reported in Morningstar as either a large-cap or small-cap fund. Morningstar categories provide for an examination of specific combinations of investment styles and market capitalizations, and is popular among professional advisors and investors. I exclude funds categorized by Morningstar as mid-cap funds due to the low correlation of returns to common mid-cap indices, such as the S&P MidCap 400. Of the 2,936 funds which meet the selection criteria, 234 (6.9%) are index funds. The distribution of funds across categories of style and size is illustrated in Table 1. The number of index funds vs. managed funds varies considerably within each style category as index funds tend to be in blend, while active are more evenly distributed across the three style categories. The proportions across size categories vary to a much lesser degree, with active funds composed of a slightly greater proportion of small-cap relative to index funds.

To check weather the five year sample period is similar to other periods, I examine consecutive 5-year periods of market return and standard deviation of monthly return since 1958. Figure 1 reports the mean annualized monthly return of the index over the sample period is 15.0%, which is above the mean of all periods of 11.2%. Standard deviation of monthly returns is the lowest of the 5 year periods at 2.68%, while the mean for all 5-year periods is 4.14%.

Table 1: Summary of Funds by Style and Category						
Fund data are collected from the CRSP Survivorship Free Mutual Fund database and matched against the Morningstar Principia database. Included are small and large cap domestic equity funds (excluding sector funds) with greater than $10 million in assets and 60 months of consecutive return data from Jan 1, 2003 through December 31, 2007.						
	All Funds		**Index Funds**		**Active Funds**	
	Number	**% of total**	**Number**	**% of Total**	**Number**	**% of Total**
Large-Cap Growth:	744	25.34%	16	6.84%	728	26.94%
Large Cap Blend:	821	27.96%	157	67.09%	664	24.57%
Large Cap Value:	588	20.03%	7	2.99%	581	21.50%
Total Large Cap	**2153**	**73.33%**	**180**	**76.92%**	**1973**	**73.02%**
Small Cap Growth:	345	11.75%	5	2.14%	340	12.58%
Small Cap Blend:	267	9.09%	43	18.38%	224	8.29%
Small Cap Value:	171	5.82%	6	2.56%	165	6.11%
Total Small Cap	**783**	**26.67%**	**54**	**23.08%**	**729**	**26.98%**
Totals:	2936		234	7.97%	2702	92.03%

Figure 1

Annualized Monthly Return and Standard Deviation of Monthly Return for Consecutive 5-year Periods



Data required for the pricing models includes the market return and the risk free rate of return. I use three measures of market return: the CRSP total market value weighted index, the S&P 500 total return, and the S&P SmallCap 600 total return. Both S&P indices are downloaded directly

from the S&P website. The factor mimicking portfolios for size, book to market and momentum are collected from Kenneth French's website (http://mba.tuck. dartmouth.edu/pages/faculty/ken.french)

METHODOLOGY

Hypotheses are tested using both Jensen's original model of asset pricing based on the CAPM, as well as Carhart's 4-factor model. I examine returns on a monthly basis over the sample period of January 1, 2003 through December 31, 2007.

Jensen's model:

$$R_{it} - R_{Ft} = \alpha_i + \beta_i [R_{Mt} - R_{Ft}] + e_{it}$$

where

R_{it} = the return of fund i at time t
R_{Ft} = the risk free rate of return
α_i = the risk adjusted excess return of fund i
R_{Mt} = the return of benchmark indices, as described below
Model 1: market return = CRSP value-weighted index
Model 2: market return = matched S&P 500 / S&P 600 SmallCap indices
Model 3: market return = S&P 500 index

Carhart 4-factor model:

$$R_{it} - R_{Ft} = \alpha_i + \beta^1_i [R_{Mt} - R_{Ft}] + \beta^2_i (SMB_t) + \beta^3_i (HML_t) + \beta^4_i (MOM_t) + e_{it}$$

where

SMB = the difference in return in a small cap portfolio and a large cap portfolio
HML = the difference in return in a high book to market value portfolio and a low book to market value portfolio
MOM = the difference in return in a momentum based portfolio and a contrarian based portfolio

Both Jensen and Carhart model regressions are run individually for all funds, resulting in coefficients for risk factors for each fund, and equally weighted coefficient means are reported. I use the three different indices above as the market portfolio in running three models separately. In model 1, the index used is the value weighted total market return reported in CRSP. However, since this index is composed of all NYSE, Amex, and NASDAQ stocks, it may not accurately match the composition of the funds in this study. Gruber (1996) matches index funds against the particular index each is attempting to mimic in order to determine excess return. I apply this basic

methodology here by using the S&P 500 index as the market return for large cap active and index funds, and the S&P SmallCap 600 as the market return for small cap funds. (I also attempted this same methodology while retaining mid-cap funds and adding the S&P MidCap 400 index. R^2 values were much lower and tracking error of the mid-cap funds appears much greater. This may be due to differences in definition of mid cap stock by S&P and Morningstar.) Each fund is then regressed against the index from its own category. For model 3, I use only the S&P 500 total return index. Since it is composed of large cap stocks, I drop all small-cap funds in this portion of the analysis.

As a fourth model of adjusted return, I calculate excess objective return. Objective return is determined by first dividing all funds in the sample into the six Morningstar classifications: large growth, large blend, large value, small growth, small blend, and small value. The mean return for each category is calculated for each month. That mean is subtracted from the actual return for funds within the category to result in the excess objective return.

$$\text{Excess Objective Return}_{i,t} = (R_{i,t}) - (R_{o,t})$$

where

$R_{i,t}$ is the return of fund i for period t, and $R_{o,t}$ is the mean return of all funds with the same investment category for period t.

RESULTS

To test the hypothesis that risk-adjusted returns for active and index funds are different, I include all funds from the sample. Regressions using both the Jensen and Carhart models determine the excess return and risk factor loadings of each fund. A separate regression is run for each fund in the sample, and the mean coefficients are reported in Table 2. Results from the Jensen and Carhart models are similar, with the 4-factor models increasing R^2 by 2 to 7 percentage points in each model. In model 1, the Carhart intercepts of index and active funds of -55 and -145 basis points respectively closely match their mean expense ratios of 59 and 134 basis points. These results closely match those of Carhart (1997), Gruber (1996), and Glode (2007). Mean beta is very near 1 for both groups, but the small-cap factor is larger for index funds.

In model 2, the mean alpha of index funds is negative again at -29 basis points while the intercept of active funds is virtually 0. Alphas improve for both index and active funds for model 2 over model 1 because small cap stocks produced higher returns over the period, but there are more large cap funds than small cap. Model 2 compares large cap funds only to the large cap index, which also changes the loadings on the SMB factor. The SMB coefficient for active funds is nearly double that of index funds (0.1127 vs. 0.0565) matching Gruber's (1996) finding that active funds

tend to hold more smaller stocks. Results for large cap funds only reported for model 3 are very similar to model 2.

Table 2: Overall Results for All Funds

This table presents coefficient estimates for factors in the Jensen and Carhart models of excess return. The regression models are run for each fund individually, and the means of the coefficients are calculated and reported below. The models are estimated for 2936 total funds (176,160 monthly observations). Different share classes of funds are treated as different funds. The models are estimated for the 60 month period from January 2003 through December 2007. Each model uses a different proxy for market return, as described in the text. R^2 values are the mean R^2 from all regressions for the particular model.

Jensen's model: $R_{it} - R_{Ft} = \alpha_i + \beta_i [R_{Mt} - R_{Ft}] + e_{it}$

Carhart 4-factor model: $R_{it} - R_{Ft} = \alpha_{it} + \beta^1_i [R_{Mt} - R_{Ft}] + \beta^2_i (SMB_t) + \beta^3_i (HML_t) + \beta^4_i (PR1YR_t) + e_{it}$

	Model 1 – CRSP value weighted index				Model 2 – S&P Large Small Combined				Model 3 – SP 500 Index			
	Index funds		Active funds		Index funds		Active funds		Index funds		Active funds	
Model/ Variable	Mean	p value	Mean	p value	Mean	p value	Mean	p value	Mean	p value	Mean	p value
Jensen												
alpha - month	-0.0016	<.0001	-0.0014	<.0001	-0.0004	<.0001	0.0000	0.412	-0.0003	<.0001	0.0000	0.681
alpha - annual	-0.0196		-0.0172		-0.0052		-0.0004		-0.0041		-0.0002	
RM-RF	1.0442	<.0001	1.0645	<.0001	1.0269	<.0001	1.0176	<.0001	1.0215	<.0001	1.0276	<.0001
R^2	0.9243		0.8241		0.9715		0.8427		0.9710		0.8336	
Carhart												
alpha - month	-0.0005	<.0001	-0.0012	<.0001	-0.0002	<.0001	0.0001	0.077	-0.0002	0.000	-0.0001	0.063
annual - annual	-0.0055		-0.0145		-0.0029		0.0008		-0.0026		-0.0009	
RM-RF	1.0190	<.0001	0.9970	<.0001	1.0048	<.0001	0.9815	<.0001	1.0065	<.0001	0.9925	<.0001
SMB	0.2517	<.0001	0.1555	<.0001	0.0565	<.0001	0.1127	<.0001	0.0439	<.0001	0.1233	<.0001
HML	0.0006	0.966	-0.0144	0.014	-0.0413	0.002	-0.0434	<.0001	-0.0435	0.007	-0.0277	<.0001
Mom	0.0249	<.0001	0.0214	<.0001	-0.0041	0.244	0.0238	<.0001	0.0098	0.002	0.0452	<.0001
R^2	0.9836		0.9024		0.9862		0.8979		0.988		0.8971	
Funds	234		2702		234		2702		180		1973	

To examine returns under different investment states, the 60 monthly returns for the CRSP total market value weighted index for the period are divided into quintiles. The months in lowest quintile make up state 1, the next quintile is state 2, and so on. Regressions are run on each fund using data from the first 30 months of the sample period to determine the risk factor loadings. Those loadings are then used to determine expected return for each month of the second 30 months of the sample period (24 and 36 month estimation periods were also used, and results were very similar). Actual return less expected return equals excess return. I then examine excess return of both active and index funds across the range of states. Table 3 reveals a consistent pattern in differences

between the mean excess return of active and index funds. Models 1 through 3 show that active funds significantly outperform index funds at both market extremes, with active funds outperforming by 1.69% to 2.18% on a risk adjusted basis during the worst market state, and 3.91% to 4.41% under the best market conditions. This in contrast to Kowsowski (2006), who finds positive excess returns for active funds only during recessionary periods using quarterly data. However, he groups together all funds with the same CRSP objective into a value weighted portfolio and uses NBER recession periods as bad states and expansion periods as good states. Examining the composition of the differences reveals that model 1 reports significant negative returns for the index funds during good market states, which may suggest that there is a breakdown in the model or during market extremes, and that the total market index may not be the best fit for the range of states defined here. This may again be the result of small cap stocks out performing large cap during the period. Models 2 and 3 correct for this, and the differences in active and index funds reported there are driven by over-performance of active funds during both extremely good and bad states. This suggests that fund managers add value by avoiding steep losses in the down markets, while also producing positive risk adjusted excess returns during good markets. This results may not be detected in examining all states together. The results from Model 4 using excess objective return do not reveal as strong of a relation in poor markets, and no significant difference in good markets. However, since by definition, overall excess returns for all funds is 0, a lower relation is expected. Also, index funds are primarily blend funds, so that is the main category in which their performance can provide an impact.

Table 3: Excess Return by Market Return Quintile

The first 30 months of the sample period are used to determine risk factor loadings for all funds in the sample. Those loading are used to calculate expected return for the second 30 months of the period. Actual return less expected return equals monthly excess return, and annual return is monthly return compounded over 12 periods. The period is divided into quintiles of 6 months each based on market return with 1 the lowest return. Model 4 contains twice as many observations as the others since it covers the entire sample period while models 1, 2, and 3 report excess return for only the final 30 months.

		Model 1 CRSP			Model 2 SP Match			Model 3 SP Large			Model 4 Excess Obj Ret		
Market State Quintile (1 is low)	Monthly Observ-ations	Monthly Mean Excess Return	Annual Mean Excess Return	p value	Monthly Mean Excess Return	Annual Mean Excess Return	p value	Monthly Mean Excess Return	Annual Mean Excess Return	p value	Monthly Mean Excess Return	Annual Mean Excess Return	p value
Active													
1	16212	0.0020	0.0245	<.0001	0.0013	0.0154	<.0001	0.0018	0.0217	<.0001	0.0000	0.0004	0.655
2	16212	-0.0004	-0.0045	<.0001	0.0010	0.0121	<.0001	-0.0001	-0.0014	0.282	0.0000	0.0005	0.480
3	16212	0.0007	0.0079	<.0001	0.0007	0.0087	<.0001	0.0004	0.0052	<.0001	0.0000	0.0003	0.624
4	16212	-0.0001	-0.0012	0.270	0.0027	0.0332	<.0001	0.0022	0.0269	<.0001	0.0000	-0.0002	0.808
5	16212	0.0008	0.0096	<.0001	0.0043	0.0523	<.0001	0.0034	0.0418	<.0001	0.0000	-0.0001	0.907

Table 3: Excess Return by Market Return Quintile

The first 30 months of the sample period are used to determine risk factor loadings for all funds in the sample. Those loading are used to calculate expected return for the second 30 months of the period. Actual return less expected return equals monthly excess return, and annual return is monthly return compounded over 12 periods. The period is divided into quintiles of 6 months each based on market return with 1 the lowest return. Model 4 contains twice as many observations as the others since it covers the entire sample period while models 1, 2, and 3 report excess return for only the final 30 months.

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Market State Quintile (1 is low)	Monthly Observ-ations	Monthly Mean Excess Return	Annual Mean Excess Return	p value	Monthly Mean Excess Return	Annual Mean Excess Return	p value	Monthly Mean Excess Return	Annual Mean Excess Return	p value	Monthly Mean Excess Return	Annual Mean Excess Return	p value
Index funds													
1	1404	0.0002	0.0027	0.049	-0.0001	-0.0012	0.500	0.0003	0.0036	0.002	-0.0004	-0.0046	0.002
2	1404	-0.0004	-0.0047	0.007	0.0008	0.0096	<.0001	-0.0003	-0.0037	0.011	-0.0005	-0.0058	<.0001
3	1404	0.0003	0.0038	0.022	0.0002	0.0024	0.040	-0.0002	-0.0029	0.019	-0.0003	-0.0037	0.003
4	1404	-0.0013	-0.0156	<.0001	0.0014	0.0169	<.0001	0.0008	0.0091	<.0001	0.0002	0.0023	0.093
5	1404	-0.0024	-0.0288	<.0001	0.0007	0.0084	<.0001	-0.0002	-0.0018	0.097	0.0001	0.0013	0.423
active – index													
1		0.0018	0.0218	<.0001	0.0014	0.0169	<.0001	0.0015	0.0181	<.0001	0.0004	0.0048	0.004
2		0.0000	0.0002	0.930	0.0002	0.0024	0.352	0.0002	0.0024	0.230	0.0005	0.0060	.0001
3		0.0003	0.0036	0.239	0.0005	0.0060	0.093	0.0007	0.0084	0.023	0.0003	0.0036	0.004
4		0.0012	0.0145	<.0001	0.0013	0.0157	<.0001	0.0015	0.0181	.0001	-0.0002	-0.0024	0.118
5		0.0032	0.0391	<.0001	0.0036	0.0441	<.0001	0.0036	0.0441	<.0001	-0.0001	-0.0014	0.454

Since investors do not hold funds in isolation, 1000 diversified 4-fund portfolios are constructed by randomly selecting one fund from each of the following Morningstar categories: large-cap growth, large-cap value, small-cap growth, and small-cap value. Due to a lower number of funds in the small cap categories, selection without replacement is not possible. In order to minimize funds being selected in multiple portfolios, the random selection process is completed in 10 cycles, selecting 100 funds from each category during each cycle. As a result, a fund can be included in no more than 10 different portfolios. Returns are weighted to roughly match the distribution of funds in each style and size category, with a 37.5% weighting in both large cap categories, and a 12.5% weighting in both small cap categories. The risk adjusted return for each fund is calculated using by combining the indices in model 2 into one performance measure: an index made up of S&P 500 with a 75% weight and S&P 600 SmallCap with a 25% weight. Factor loadings are calculated as previously outlined using both the Jensen and Carhart models, treating each portfolio as a single fund. (Results using the CRSP valued weighted index and the S&P 500 are very similar to those reported). The comparison sample is constructed using the same basic methodology with the index fund group. Due to a smaller number of funds, I form 250 portfolios,

each containing 1 large-cap blend index fund (75% return weighting) and one small-cap blend (25% return weighting). This sample is used to examine differences in performance between diversified portfolios of four active funds and a simple 2-fund index portfolio.

Table 4 reports the pattern of returns for the active and index portfolios across market states. As with individual funds, the active portfolios appear to outperform the index portfolios during extreme market conditions, at 1.81% annually during poor markets and 3.29% during the best. Again, the index portfolios performance is more consistent across market states, as expected, so the differences result from over-performance of the active funds.

Table 4: Portfolio Excess Return by Market Quintile

As with individual funds, the first 30 months of the sample period are used to determine risk factor loadings for all hypothetical portfolios. Those loadings are used to calculate expected return for the second 30 months of the period for each portfolio. Actual return less expected return equals portfolio excess return monthly return, and annual return equals monthly return compounded over 12 periods. The full period is divided into quintiles of 6 months each based on market return with 1 the lowest return. The market proxy used is the S&P 500 and S&P SmallCap 600 combined index described in the text.

		Jensen			Carhart		
Market State Quintile (1 is low)	Monthly Observations	Mean Excess Return	Annual Mean excess return	p value	Mean Excess Return	Annual Mean excess return	p value
1	7500	0.0017	0.0201	<.0001	0.0014	0.0164	<.0001
2	7500	-0.0003	-0.0039	0.0002	0.0009	0.0111	<.0001
3	7500	-0.0006	-0.0073	<.0001	0.0004	0.0049	<.0001
4	7500	0.0009	0.0104	<.0001	0.0021	0.0250	<.0001
5	7500	0.0004	0.0050	<.0001	0.0025	0.0302	<.0001
4-fund Active Portfolios							
1	6000	0.0019	0.0228	<.0001	0.0017	0.0201	<.0001
2	6000	-0.0005	-0.0060	<.0001	0.0009	0.0107	<.0001
3	6000	-0.0007	-0.0080	<.0001	0.0005	0.0055	<.0001
4	6000	0.0008	0.0099	<.0001	0.0023	0.0278	<.0001
5	6000	0.0006	0.0069	<.0001	0.0030	0.0370	<.0001
2-fund Index Portfolios							
1	1500	0.0008	0.0095	<.0001	0.0002	0.0019	0.025
2	1500	0.0004	0.0043	0.001	0.0011	0.0127	<.0001
3	1500	-0.0004	-0.0043	<.0001	0.0002	0.0028	0.001
4	1500	0.0010	0.0125	<.0001	0.0011	0.0135	<.0001
5	1500	-0.0002	-0.0026	0.0107	0.0003	0.0034	<.0001

Table 4: Portfolio Excess Return by Market Quintile

As with individual funds, the first 30 months of the sample period are used to determine risk factor loadings for all hypothetical portfolios. Those loadings are used to calculate expected return for the second 30 months of the period for each portfolio. Actual return less expected return equals portfolio excess return monthly return, and annual return equals monthly return compounded over 12 periods. The full period is divided into quintiles of 6 months each based on market return with 1 the lowest return. The market proxy used is the S&P 500 and S&P SmallCap 600 combined index described in the text.

		Jensen			Carhart		
Market State Quintile (1 is low)	Monthly Observations	Mean Excess Return	Annual Mean excess return	p value	Mean Excess Return	Annual Mean excess return	p value
Difference: Active less Index							
1		0.0011	0.0133	<.0001	0.0015	0.0181	<.0001
2		-0.0009	-0.0103	<.0001	-0.0002	-0.0020	0.182
3		-0.0003	-0.0038	0.006	0.0002	0.0024	0.178
4		-0.0002	-0.0026	0.156	0.0012	0.0145	<.0001
5		0.0008	0.0096	<.0001	0.0027	0.0329	<.0001

While the returns presented are risk-adjusted, standard deviation of return is also an important factor in investing. To examine the relation of risk and return for both groups of funds across market states, I calculate Sharpe ratios for each portfolio for the final 30 months of the sample period. For each portfolio, I divide monthly return in excess of the risk free rate by the standard deviation of monthly return. I then multiply the monthly ratio by the square root of 12 to determine an annualized result. Overall, the Sharpe ratio is slightly better for active portfolios at 0.64 vs. 0.61 for index portfolios. I also calculate the measure for each state and report the results in Table 5. Ratios for the states are rather extreme due to the pooling of good and bad returns separately. While the ratio is negative for both groups in the lower two states, active funds tends to provide a better risk-return trade-off. In the upper two states, risk increases to a greater degree than return for the active funds over index funds. While this may appear to be a negative factor for active funds on the surface, an increasing standard deviation in good markets could result from very high returns. The results do not contradict the notion of better performance for active funds during both good and bad market states.

Table 5: Sharpe Ratio Comparisons				
Sharpe ratios are calculated for each portfolio for the entire period, and separately for good and bad states. Mean are reported in Table 5 below.				
State	Active	Index	Active - Index	p value
all	0.6427	0.608	0.0347	<.0001
1 & 2	-3.999	-4.15	0.1507	<.0001
3	5.2702	5.7612	-0.4910	<.0001
4 &5	8.4628	8.8279	-0.3650	<.0001
N	1000	250		

SUMMARY AND CONCLUSIONS

This paper compares the performance of actively managed mutual funds and index funds during good and bad states of investing from 2003 through 2007. After segmenting the period into quintiles based on overall market return, I find that individual active fund returns exceed index funds by 1.69% and 4.41% on an annualized basis in the highest and lowest quintiles, respectively.

Previous studies have found potentially contradictory results. Kosowski (2006) finds that risk adjusted returns are negative during expansion periods, but positive during recessionary periods, suggesting that fund managers add value more during poor market conditions. However, Chevalier and Ellison (1997) and others find a positive relation between past returns and flows, and the intensity is much greater for the top performers. In this paper, using monthly data and market states defined by actual market return, I provide evidence to support both ideas: actively managed funds tend to overperform during both good and bad market extremes. The results of comparing portfolios of active and index funds closely match the finding from the individual funds.

These findings may provide insight into when investors are most concerned about their investments. During average market conditions, investors are content with their performance. During the extreme highs and lows, the financial markets may receive more attention both from the media and from investors. Fund managers may focus their efforts during these times in order to boost returns and keep or attract new investors. These ideas are the topics for further study.

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INNOVATION AND ENTREPRENEURSHIP IN THE HYPERCOMPETITIVE BUSINESS ENVIRONMENT OF THE TWENTY-FIRST CENTURY: THE NIGERIAN ASPIRATION

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ABSTRACT

The main objective for this paper was to answer the question, "How can entrepreneurship innovation in Nigeria be encouraged or insured in the hypercompetitive business environment of the twenty-first century?" Two theoretical perspectives, the serendipity theory of entrepreneurship and the social embeddedness perspectives were employed to guide the study in the researchers' efforts to search for sources of entrepreneurial innovation. It was found that a competition and innovation policy is the primary instrument for triggering and assuring innovation in entrepreneurship. The related policy components were identified and built into a model for explaining and predicting entrepreneurial innovation. Policy implications were highlighted and future research directions suggested.

INTRODUCTION

Entrepreneurship has assumed a central place in development policy in the contemporary world as nations attempt to nurture it as a way to grapple with the *new unemployment* and consequent *new poverty* in the era of neoliberal economic management (Brown, 2003; Lazzarato, 2009; Robinson, 2002).

In Nigeria, the realization of the role of entrepreneurship and SMEs in socio-economic development sprang from the backdrop of the problems plaguing the economy in recent decades. The problems included slow to declining economic growth, unemployment, underemployment, and poverty. According to Ajayi (2003), the Central Bank of Nigeria (2005) and Nnanna (2006), Nigeria lost development for two decades (1981-2000) with negative-to-slow growth – and it has been epileptic even up until now. This is unfortunate. But worse still, economic growth does not impact positively on the ordinary citizens, as suggested in the worsening unemployment and poverty in the land. There has been a strong aspiration, therefore, to employ entrepreneurship for socio-economic

development since about the time of adopting the Structural Adjustment Programme, particularly from 1988, as reflected in the Industrial Policy of Nigeria (Federal Ministry of Industries, 1988). Even globally, unemployment and poverty are worsening in the neoliberal global market economy as corporations enact "brutal capitalism" or Miltonian shareholders-focused corporate social responsibility doctrine (see Feldman, 2007; see Morgan and Kristensen, 2006). There is value now only for what Reich (as cited in Williams, 1976:36) calls "technology-organization-efficiency-(profit) growth-progress" and global competition. It is equivalent to the military doctrine of "taking no prisoners". Consequently, there is a migration from traditional wage employment (as obtains in the large-scale enterprise, the civil service, and such), which is varnishing, to self-employment by starting and managing small firms; indeed, centralizing entrepreneurship for socio-economic development in Europe and the United States of America (Eliasson, 2006; Nijhof, 2005).

Implicit in recent policy discourse in Nigeria is an aspiration to nurture entrepreneurship to take the country to be one of the top twenty economies of the world in 2020 codenamed, "Vision 20 – 2020". It is also realized that the globalization of national economies has revved up competition and, thus, the need for entrepreneurial innovation for survival. Thus, the present researchers raised the key research question, "How can entrepreneurial innovation in Nigeria be encouraged or assured in the hypercompetitive business environment of the twenty-first century?" The main objective in this paper, therefore, is to find a path to establish a way to nurture entrepreneurial innovation in Nigeria.

After this general introduction, the rest of the paper is structured as follows. The literature search is made for conventional wisdom with respect to policy discourse on entrepreneurial innovation. We utilize serendipity theory of entrepreneurship and social embeddedness perspective to ground the study, or provide the context for entrepreneurial innovation. Next, we try to identify, select, and give attention to a number of variables that we think would be critical to a successful entrepreneurial innovation policy. Subsequently, we build these latent constructs into a hypothesized input model for relating entrepreneurial innovation to socio-economic development. We conclude the paper in the subsequent section.

THEORETICAL PERSPECTIVE

This section addresses the conventional wisdom regarding innovation in entrepreneurship. It does so through a review of the literature. We differentiate *development* from the *emergence* of entrepreneurs. Consequently, we utilize two theoretical perspectives to ground the present study, namely, serendipity theory of entrepreneurship and social embeddedness perspective. A theoretical perspective is a way of seeing; a theoretical roadmap to achieving explanation and understanding of phenomena under investigation. Consequently, these perspectives are presented in the two subsequent subsections to guide the study.

According to Dew (2009), a theory of entrepreneurship would be incomplete without the incorporation of the concept of serendipity. And once such a non-trivial place has been accorded to it for entrepreneurial behaviour, many implications follow.

Serendipity here is at the intersection of three important domains of opportunity recognition and exploitation. These are the domains of search, prior knowledge, and contingency. We start with the domain of search. The entrepreneur may search for exogenous opportunities created by the existence of unserved or under-served (unmet) market needs. The search may be in terms of endogenous processes arising from the possibilities of serving new markets by recombination of resources.

The domain of *prior knowledge* or accumulated experience involves generating specific knowledge for facilitating the evaluation and identification of a business opportunity due to the development of *insight*. Experience can be processed into understanding and assimilated as wisdom, skills, and competencies that may be used as resources (Agiobenebo and Ajie, 2004: 239). For example, previous start-up experience explains further start-up entrepreneurship and performance (Khan and Butt, 2002). Research is a disciplined search for truth or answers to problems. It is synonymous with invention; a journey to discovery; a disciplined inquiry for creating knowledge (Cardullo, 1999: 4-6, 92,105; Easterby-Smith et al., 2002: xii, 9-10; Punch, 2003:7; D'cruz and Jones, 2004: 91; Hurmerinta-Peltomaki, 1996).

This explains the many cases where researchers and inventors set up business enterprises themselves to commercialize their inventions, eliminate transaction cost, and maximize rent. This is the source of "knowledge-intensive" SMEs with significant value added products, often resulting from a breakthrough in process technology.

The third component of serendipity is the domain of *contingency* or what has been called "spontaneous opportunity recognition". Search is normally conducted for an object which is located somewhere, but the exact position is not known. At least, the features are known such that the object of search can be identified when it is seen. This is where prior knowledge (sagacity) plays a role in opportunity recognition. Thus, sagacity is a resource.

Of the three domains, it is sagacity that is of interest to the present study. If knowledge is developed and enhanced, then innovation can be enhanced in consequence. The point is that sagacity has to be developed. Education and lifelong learning (Nijof, 2006) will be used to create the skills and knowledge for employment and employability, which in turn can enable potential entrepreneurs to acquire and accumulate the experience for developing sagacity.

The social (network) embeddedness theory is based on the idea of the contextualization of economic activities (Yang, 2004). That is, economic activities take place in a social space, milieu, setting, or context. Social embeddedness theory suggests that economic activities take place in social contexts. The general business environment provides the context for entrepreneurship and the founding (emergence) of the firm in terms of cognition (mental schemas or worldviews), culture (social norms such as legitimacy and recognition attached to business entrepreneurship; and cultural

conditioning), social structure (inter-actor ties), and political institutions. Political institutions are crucial to the operation of business firms for providing governance structures, activities and related services such as regulation, approval, registration, and issuance and revocation of business permits or operating licenses (Short et al., 2006; Das, 2008; Brandl and Bullinger, 2009). Regulatory frameworks are particularly important because they confer *legitimacy* on business operations (Boyne and Meier, 2009). In other words, organizational embeddedness means its rootedness, which is the fact of its taking root in, obtaining sustenance from, and suffering constraints in the 'soil' that is the social context.

COMPETITION IN THE GLOBAL MARKET ECONOMY

Competitive pressures are easy to see if globalization is seen together with the creation of a global market economy and global village through the facility of globalizing information and communications technologies and the liberalization and deregulation of national economies.

All national (domestic) markets are accessible through the digitalized, web-based, marketspace (in cyberspace as distinguished from the geophysically located marketplace) in the compressed distances of the virtual global market economy (Kotler, 2003; 10) or be reached through satellite broadcasting and cable televising. Thus, foreign business enterprises are equidistant from local SMEs as measured from the point of a mouse click. As such, they can access or reach any country's domestic market in the global economy just by mouse clicks and saturate the 'domestic' business environment with competitors and competition. The Internet enables marketers to make "cluster bomb" presentation of goods and services globally with multimedia advantage, combining information and entertainment at virtually no cost (Tan and Chia, 2007).

The World Wide Web (www) consisting of networked computers (linked by servers and modems) is an example of the B-Web "boundryless" structure. The IT infrastructure enables capitalism to move electronically; that is, covering great distances in split seconds by *time-space compression* (Gibson, 2004) or *despatialisation* of economic activities (Kwiek, 2005) for accessing markets unencumbered by spatio-temporal limitations of the environment; and move from market segmentation to market fragmentation (Kim et al., 2004).

Another way of perceiving competitive pressures under globalization is in terms of the increasing interconnectedness of national economies (Stoner et al., 1995: 439). It suggests that more interactions occur as the relational space among people is collapsed. There are more market players, and more products/services are introduced into the market. These create more competition in the compressed relational space.

As such, continuous innovation is crucial for attaining a series of temporary (rather than sustainable) competitive advantages (Farjoun, 2007) for survival in this new marketplace. But what is innovation and how can it be nurtured among entrepreneurs? These issues are taken up in the subsequent sections of this paper.

INNOVATION AND ENTREPRENEURIAL PERFORMANCE

Innovation is central to entrepreneurship and much of entrepreneurship theory indicates this centrality, as suggested in the seminal work of Schumpeter (as cited in Parboteeah, 2000). Schumpeterian entrepreneurship, according to Parboteeah (2000), involves a firm changing the rules of competition, that is, by "creative destruction". The Schumpeterian entrepreneur is an innovator, which makes him/her an active agent of economic development (see also Akeredolu-Ale, 1975). In the Western cultural account, therefore, rule-breaking behaviour and individualism are encouraged and celebrated along with the idealization of entrepreneurship (Brandl and Bullinger, 2009; see also Spencer et al., 2008).

Pearce and Carland (1996) found that firms with high entrepreneurial intensity had higher performance than firms with low entrepreneurial intensity. *Entrepreneurial intensity* is evidenced by innovative activities, which involve the creation of *new products*, the introduction and implementation of cost effective processes, the generation of *new ideas;* and very frequent changes or improvements in products, services, and processes (Sinkula et al., 1997). Koster and Rai (2007) consider entrepreneurial intensity in terms of start-up (*new*) businesses. The principal idea here seems to be that entrepreneurship is synonymous with innovation both of which connote *newness*. Innovation intensity needs, at least, to be at the rate at which competitors change their product lines or product quality; or at the rate that customers' attitudes, tastes, and other characteristics change. In general, the firm must be able to change, at least, at the base rate of environmental change (Sinkula et al., 1997) if it merely has to maintain its relative position in the market. What is the source of (entrepreneurial) innovation?

One source of innovation is intuition. Intuition is based upon "judgment in lieu of logical business decisions" (Jackson et al., 2001). According to Schumpeter (1934) the entrepreneur's success depends on intuition. In his words,

> Here the success of everything depends on intuition, the capacity of seeing things in a way which afterwards proves to be true, even though it cannot be established at the moment, and of grasping the essential fact, discarding the unnecessary and, even though one can give no account of the principles by which this is done (quoted in Jackson et al., 2001).

What Schumpeter saw as intuition leading to innovation, Shelton and Darling (2001) described as "quantum knowing". The point of quantum knowing derives from the superconnectivity between the entrepreneur and the quantum field (constituted by the universe as a field of information) which the entrepreneur accesses for previously unknown information and develops infinite wisdom. Langer's theory of mindful decision-making (Langer, as ultimately cited in Shelton and Darling, 2001) is in line with these intuitive approaches to entrepreneurial knowledge and

performance. It involves staying mindful of, or being alert to, developments in the business environment and taking advantage of opportunities that might arise from the environment. It involves getting tuned to the environment by "gate-keeping", mounting a permanent antenna for scanning the environment (Gielen et al., 2003). Being able to anticipate them 'correctly' and acting proactively can put the entrepreneur a step ahead of competitors. Anticipation can be achieved through "weak signal management" (Baker, 1996).

Another source of innovation is *team or group effort*. In this context, a "constructive controversy" untrammelled by interpersonal relational conflicts and fear of victimization (Tjosvold and Yu, 2007), or "creative synthesis" from conflicted ideas (Fillis, 2001) has the potential for the exploration and generation of ideas, approximating a *collectively exhaustive* set of alternatives in a decision situation such that better and innovative solutions can be arrived at and implemented.

Consequently, group decision making enables members of the group to transcend themselves and circumvent their individual cognitive limitations to make creative or innovative decisions and effect solutions to organizational problems (Kang et al., 2006; Loasby, 2007). Group effectiveness in terms of innovation is a function of members' *cognitive structure* (whether homogeneous or heterogeneous) and their *demographic structure* (whether homogeneous or heterogeneous) (Roy and Elango, 2000). Thus, Gray (1999) found that entrepreneurs who employed others used more *divergent* and *inventive* decision-making styles than those who did not employ others. An example of creative synthesis from conflicted ideas is the notion of "bisociation", which involves the putting together of two unrelated ideas to form a single identity (Fillis 2001) or reasoning paradoxically to deal or cope with a paradoxical, chaordic (consisting of both chaos and order) and puzzling world (Shelton and Darling, 2001).

It can be suggested that the use of "brainstorming" and similar methods are demonstrative that ideas or knowledge are constructed or created.

In relation to the perspective advanced in this paper, Atherton's (2003) knowledge typology can be useful for understanding knowledge creation in the entrepreneurial domain and nurturing entrepreneurial innovation. It consists of entrepreneurial knowledge in four dimensions, placed on two-by-two bipolar scales, namely, transactional-strategic knowledge on a vertical pole and subjectivized-objectivized knowledge on a horizontal pole. The *transactional knowledge* consists of knowledge that is tactical, applied, shaped/orthodoxical, responsive (to particular situations, contexts, problems, and events), and short-term in nature. At the other end of this pole is *strategic knowledge,* which is strategic (with a long-term horizon), abstracted (meaning a *reflective understanding* of the environment), shaping/iconoclastic (for example, questioning of cherished beliefs and values), and enacting.

The *subjectivized knowledge* at one end of the subjectivized-objectivized pole is knowledge that is subjective, contexualized, informal, tacit, intuitive, and personalized. But the *objectivized knowledge* at the other end of the subjectivized-objectivized pole is knowledge that is objective, decontexualized (for example, the knowledge can be applied to different contexts), formal, explicit,

rationalized, and shared. It emerges over time on the basis of a long period of interaction with the business environment, resulting in the development of a philosophy or world-view.

It seems, from the above, that the strategic-objectivized knowledge is in the domain of formal education and the transactional-subjectivized knowledge is in the domain of the 'school of experience' or informal education. It is reclassified as such in this study. In particular, high level formal education is theorized as facilitating innovation by providing a framework for questioning (Macdonald et al., 2007) beliefs, mental models, and even cherished ideas, which makes it iconoclastic (attacking and undermining or destroying established beliefs or ideas), leading, hopefully, to changes in the attacked beliefs, values, ideas, systems, and ultimately leading to innovation, which may be new beliefs, values, ideas, systems, or ways of doing things. Knowledge, here, is created through a cycle of questioning, analyzing, modeling, reflecting, and consolidating in a *continuous, teleological, process* (Feinwick and Hall, 2006).

The so-called intuition can be knowledge created by the brain from data feed into it from all sensory inputs and from all sources such as formal learning and sorted into patterns in relation to the problem being contemplated. As such solutions emerge from 'nowhere', suddenly and in no logical, rational way or that can be accounted for (Saddler-Smith and Burke, 2009). Thus, according to Polanyi (as cited in Hildreth and Kimble, 2002), knowledge consists of three main theses:

- That true discovery cannot be accounted for by a set of articulated rules or algorithms.
- That knowledge is public but also to a large extent personal (i.e. it is socially constructed).
- That the knowledge that underlies explicit knowledge is more fundamental; all knowledge is either tacit or rooted in tacit knowledge.

That is, tacit knowledge is internalised in the unconscious mind and "inaccessible to consciousness" which creates a situation where "we know more than we can tell" and renders it forever personal.

In line with the context of the present study, we argue that knowledge intensity can enhance innovation intensity. If, besides, the learning is life-long, it can be a source of continuous improvement. The role of higher education, particularly, the university (in view of its theory-based education), in addressing societal problems is captured in Thiem (2008) by which education systems, institutions, and practices are positioned as useful sites for a variety of theory-building projects, discourses, and activities. They are useful sites for discourses on entrepreneurship, knowledge economy formation, economic development, and so on.

DEVELOPMENT OF ENTREPRENEURS

The conception of developing entrepreneurs involves a deliberate process of encouraging, nurturing, and building entrepreneurship talent. Here, the state has the overall policy responsibility.

Its execution can take various forms and agencies. The university system will be called upon to create the entrepreneurial knowledge.

The role of the state in the development of entrepreneurial innovation is in the area of creating an *enabling policy framework* (see Intarakumnerd, 2005), as advocated under social liberalism, which urges the state to take a parametric stance on economic development. The stance involves, among others, the provision of infrastructure services and development of human capital (White, 1984:100).

The first of two such policy regimes is the introduction of entrepreneurship development course in the university system in Nigeria. The course will be taken by all undergraduates in Nigerian universities. The other is a policy to make PhD the minimum teaching qualification in Nigerian universities.

Infrastructures, according to the African Development Bank (2007: 158-161) consist of "the complex of physical structures and networks within which economic (in the context of the present studies, academic) activities are carried out" (see also Kristiansen, 2001). To Castree (2006), they, metaphorically, constitute the 'arteries' through which the more fluid forms of economic (academic) activities flow. Infrastructures for the university system include lecture theatres, offices, equipment, libraries (particularly, the universal library) and such.

Besides those specific to universities, infrastructures, generally, such as roads and telecommunications network enable entrepreneurs to access resources and markets unhindered by spatial and temporal boundaries. It is a veritable instrument for global networking among firms. Research confirms that entrepreneurship is significantly related to access to road networks and Internet connections [Low et al., 2005; see Ibenta, 2000].

The state of infrastructures in the Nigerian university system is to say the least, embarrassing. This point has been made by the Academic Staff Union of Universities (ASUU) several times. In fact, ASUU has a running battle with the Federal Government of Nigeria (FGN), among other reasons, on account of inadequate and decadent infrastructure for decades and it was one of the major reasons over which the Union went on strike from June to November, 2009.

THE UNIVERSITY AND ENTREPRENEURIAL INNOVATION

Several scholarly researches have established the association between the presence of universities and the development of regions where such universities are located (Gielen et al., 2003; Jones-Evans and Pandya, 1996; Nagle, 2007; Sotarauta and Kosonen, 2003). This appears to be possible because the universities develop entrepreneurial skills and competencies.

A prerequisite to the development of entrepreneurial innovation can be thought to be the academic human capital formation (AHCF). That is, the development of high quality academics in sufficient quantity in the universities. The researchers ground this subsection on the *organizational learning* (the learning university) concept as a supplementary frame of reference. The organizational

learning construct, according to Fiol and Lyle (as cited in Dixon et al., 2007), represents the process of improving actions through better knowledge and understanding.

How can the university learn in other to improve its entrepreneurial knowledge service provision to the nation? According to Argyris and Schon (as quoted in Sinkula et al., 1997),

Organizational learning occurs when members of the organization act as learning agents for the organization, responding to changes in the internal and external environments by detecting and correcting errors in organizational theory in use, and embedding the results of their inquiry into private images and shared maps of organization.

The individual learning agents for the Nigerian university system are the faculty members. They are crucial to curriculum innovation, design, interpretation, and implementation. Interpretation involves translating abstract contents into operational terms and putting the curriculum to work.

Principally, entrepreneurship capital formation consists of researching in and teaching entrepreneurship. The main tool for achieving these is the academic discourse. It is the formal and systematic examination of entrepreneurship which can help to ensure the institutionalization of entrepreneurship and transmission of its ideals. It involves creating value for entrepreneurship as a legitimate target of human endeavor. Discourse in his respect, in the Western cultural account, is exemplified in Joseph Schumpeter's now classical and seminal work entitled, *The Theory of Economic Development*. The Austrian School was a major influence in this institutionalization process (Brandl and Bullinger, 2009).

The value of discourse lies in distilling abstract ideas into concrete recipes by specifying variables, instruments, researchable issues, defining characteristics of entrepreneurs and similar, such that entrepreneurship ideals become teachable and learnable (Brandl and Bullinger, 2009). The results of this discourse would constitute the contents of entrepreneurship education and built into the university academic programme (curriculum). Pedagogical strategies are vital in imparting the values and contents of the curriculum (Audet, 2000).

What are the defining characteristics of the entrepreneur which need to be taught and acquired and should be built into the university academic programme? A review of the extant literature reveals that the most important characteristics of entrepreneurs appear to be their (i) need for achievement, (ii) locus of control, (iii) risk-taking behaviour, (iv) creativity, (v) innovation, (vi) strategic acting, (vii) integration of individual and social interests, and (viii) goal-orientation. Indeed, much of entrepreneurship literature rests on the perception of the entrepreneur as a risk-taker, innovator, creator, and similar collocations (Hisrich and Peters, 2002: 66-70; Koiranen and Hyrsky, 1996).

But except innovation and goal-orientation, the other factors are hotly disputed (Akeredolu-Ale, 1975: 21; Carland et al., 1999; Jackson et al., 2001; Holmgren and From, 2005; Spencer et al., 2008; Brandl and Bullinger, 2009). For Jones and Spicer (2005), the deep and inconvenient truth, which has been denied for a long time now, is that, entrepreneurship is an empty signifier or an impossible and incomprehensible object.

The present researchers feel that the study of entrepreneurship is an unfolding enterprise and should be kept open. Far more important than crafting present content of entrepreneurship education, however, is the ability of universities to acquire *learning capabilities* for continuously shaping entrepreneurship discourse and achieving curriculum dynamism. This is akin to the primacy which Romer (as cited in Peters and Besley, 2008) accorded to "meta-ideas", which are ideas for supporting the production and transmission of other ideas.

EMERGENCE OF ENTREPRENEURS

We differentiate the *development* from the *emergence* of entrepreneurs. While the universities make conscious efforts to produce (develop) entrepreneurs, entrepreneurship also emerges from the social environment. The general environment has a conditioning or shaping effect on entrepreneurship.

As suggested before, a social embeddedness perspective suggests that economic activities take place in social contexts. The general business environment provides the context for entrepreneurship and the founding of the firm in terms of cognition, culture, social structure, and political institutions (Yang, 2004; Short et al., 2006; Das, 2008; Brandl and Bullinger, 2009).

For example, Leadbeater and Oakley (as cited in Peters and Besley, 2008) maintain that it is a mistake to overstate public policy as a driver of entrepreneurship and innovation; the more potent forces include: (i) *technological change* and knowledge creation, which open opportunities for entrepreneurs; (ii) *cultural change*, which makes it more acceptable to take risk, work for self and start a business; and (iii) *economic change*, which makes working for large corporations less appealing and working for oneself more appealing.

PERFORMANCE OUTCOMES

We argue that the elements discussed in the preceding sections can lead to entrepreneurial innovation. As suggested in Loasby (2007), a flow of innovations is possible from the academic knowledge that the university imparts to its students. This is possible and likely in view of the operation of the principle of "structural incompleteness" in organizations and self-organizing systems because of the theoretically large number of selective connections the brain can make. When so much theoretical and experiential knowledge has been accumulated, and given a problem, the brain of the individual entrepreneur, as an indefatigable self-organizing system, can draw from this vast stock of knowledge to form selective synaptic connections and patterns in relation to the problem, creatively. This is not necessarily a logical or rational process. In particular,

> The most important human cognitive capability is not rationality but pattern-making: selecting elements and arranging them in particular ways. This is not a logical

> process, but it is consistent with Barnard's emphasis on the importance of non-logical processes and also Prigogine's theme of self-organization…As Knight implies in his definition of 'living intelligently', human intelligence is the ability to construct patterns which make sense of phenomena and situations. Deductive reasoning is itself a special case of pattern-making (Loasby, 2007).

Entrepreneurial performance outcomes depend on his/her education, prior work experience, training, knowledge, and abilities which can be summarized as human capital (Blau and Ferber as cited in de Janasz and Forret, 2008). The others include social capital and financial capital. Entrepreneurial innovation is considered an antecedent to economic (GDP) growth and development.

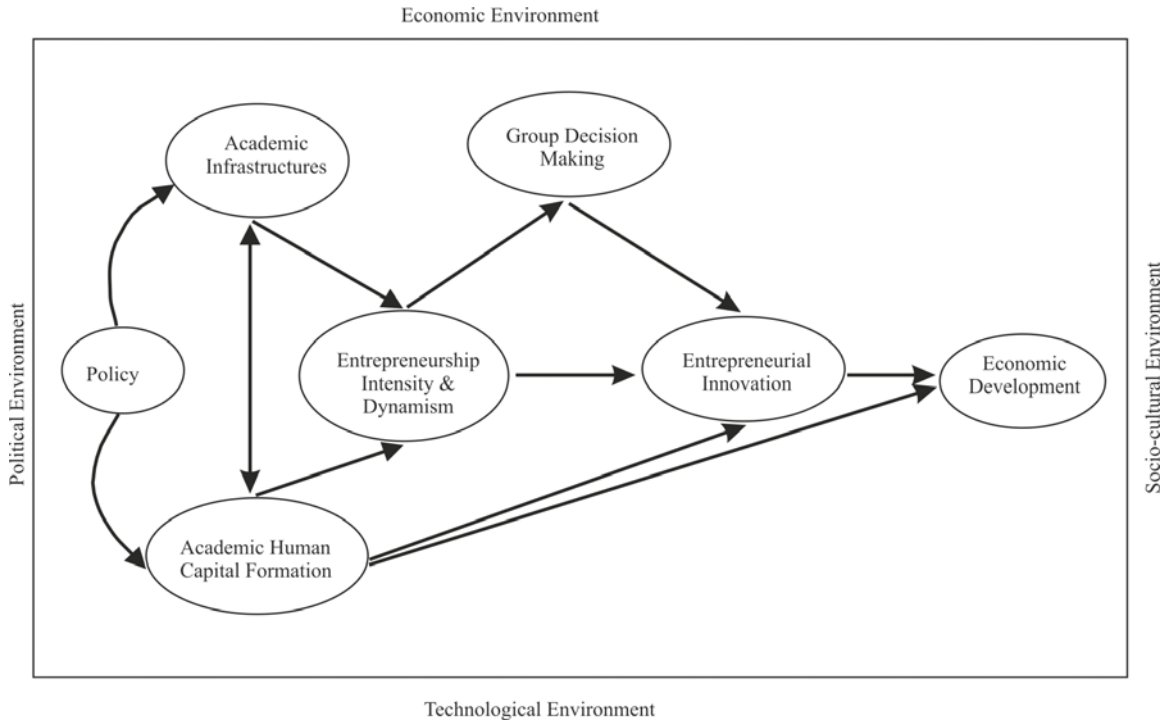
In a narrow or crude sense, economic growth is here conventionally defined in terms of GDP growth (see Olopoenia, 1983; Vanderburg, 2009). Thus, the benefit from the nurturing of entrepreneurial innovation policy is envisaged to be its contribution to GDP growth. A more useful contribution would be the improvement in human condition, as explained below.

More broadly or meaningful, the performance outcome from the entrepreneurial innovation policy framework is envisaged in terms of the sales growth, profit growth and employment growth of the entrepreneurs' firms, which translate to the reduction in unemployment, poverty and misery, and social inequality or raising of living standards. From a human-centred development philosophy, these outcomes constituting the *improvement of the human condition* (Bezason, 2004; Dudley Seers, cited in Olowu, 1985:38-39; Hodder, 1968:1-7) are the ultimate in the outcome value of the entrepreneurial innovation policy framework.

The foregoing review of the literature and discussion are summarised to give salience to the critical variables identified for entrepreneurial innovation policy and presented in the table below. Thereafter, The nexus of the relationships among the variables discussed so far may be schematized in the hypothesized latent model that follows on the following page.

The linkage among the latent constructs in the theoretical framework for the ideal entrepreneurship innovation policy is as follows: The environment is the *source of information* for formulating policy. Here, the policy is competitive, innovation-driven entrepreneurship. Its implementation entails the provision of academic infrastructures that facilitate teaching and researching activities and the production of PhDs. As Willis (cited in Thiem, 2008) points out, academic knowledge is limited and contestable, giving rise to continuous research and interminable debate; constantly evaluated and reconstructed. Ongoing research and debate (discourse) leads to building of new theories and identify new variables and constructs. These are used for teaching and furthering empirical research. The knowledge is built into entrepreneurship academic programme and taught to students who eventually become entrepreneurs. Owner-managers and members of their management teams and board use their acquired skills to *innovate* and grow their firms, which result in economic (GDP) growth and employment, poverty, and social inequality reductions.

Framework for Ideal Entrepreneurial Innovation Policy



Source: Authors' schema

Of a necessity, the university must be entrepreneurial because it cannot give what it does not have. This is where academic or knowledge entrepreneurship comes in. It involves cultivating entrepreneurial behaviour – proactive, aggressive, autonomous, risk-taking behaviour, and forever experimenting (Eliasson, 2006); being "flexible and alert" to developments (such as new knowledge; the climate of public opinion of stakeholders) in the external environment and incorporating them into the university curriculum and maintaining curriculum dynamism (Bereday et al, 1969).

CONCLUSION

The main objective for this paper was to answer the question, "How can entrepreneurial innovation in Nigeria be encouraged or assured in the hypercompetitive business environment of the twenty-first century?" Two contextualizing theoretical perspectives, the serendipity theory of entrepreneurship and the social emeddedness theory, were employed to guide the study in the researchers' efforts to search for sources of entrepreneurial innovation.

The study made a theoretical contribution to the development of entrepreneurship in the Nigerian context by suggesting the elements of a good entrepreneurship development policy. These elements or latent constructs were built into a hypothesized model providing a coherent policy framework for developing and deploying entrepreneurship for the socio-economic development of Nigeria in the twenty-first century.

We argue that a good policy is a strategic decision, whose successful implementation requires a bundle of integrated activities with associated knowledge, skills, and competencies (Porter, 1996). A policy is also the proposed solution to an identified problem or a solution searching for potential problems. As our model suggests, entrepreneurship education is the solution, and therefore antecedent, to the development of dynamic entrepreneurs. As such, it is not enough to make a policy pronouncement and just hope that it will produce the desired results. This attitude is evident in the current policy regime on entrepreneurship development in Nigeria. The Academic Staff Union of Universities has been waging a running battle with the Federal Government of Nigeria over the core issue of revamping the university system to enable it provide sound education. The unwillingness or lack of commitment on the part of the state to address this issue has resulted in frequent and prolonged closure of universities. As such, the university system has been embroiled in turbulence, which is inimical to the development of entrepreneurs.

As our model further suggests, the entrepreneurship development policy is an integrated policy framework constituted by the latent policy variables, each of which represents a micropolicy – and these are linked in a synergistic way. As such, it cannot be helpful to make selective and haphazard implementation of the policy elements. An integrated policy requires an integrated implementation for integrated success. This is not just an exercise in literary alliteration. The introduction of university-wide entrepreneurship policy and harassing lecturers to take a PhD degree in three years represent a selective and haphazard implementation of entrepreneurship policy.

The present researchers are aware of the dialectical understanding that *no problem is finally and definitively solved,* which means that all models and theories exist by sufferance of the things they have excluded (see Shackle [1972] as cited by Loasby, 2007). Consequently, this model itself is kept open and positioned for continuous refinement in the theory development effort. As such, future researchers may wish to test and refine the model.

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THE RELATIONSHIPS BETWEEN TQM AND FINANCIAL PERFORMANCE: A CONCEPTUAL MODEL FOR VIETNAMESE MANUFACTURING COMPANIES

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ABSTRACT

Product/service quality is one of the key factors in determining the success or failure of firms. Nowadays, Vietnamese companies are integrating into the World market. To gain and sustain competitive advantages in this highly competitive market, it is thus crucial for Vietnamese firms to understand in-depth the relationships between TQM and firm financial performance. This paper attempts, based on an extensive review of relevant literature, to provide a conceptual model that integrates four important constructs in the context of manufacturing firms, such as TQM, competitive advantage, employee satisfaction, and firm financial performance.

INTRODUCTION

Total Quality Management (TQM) is a management philosophy for organizations to improve their product (service) quality and customer satisfaction. TQM has played an important role in applying organizations' management practices. Quality can be viewed as one of the most important factors in gaining competitive advantage for organizations. That is why companies worldwide, large and small, manufacturing and service, have applied the principles of total quality (Zhang, 2000).

There have been a number of studies in TQM. However, few studies have focused on the topic under the financial perspective. Most of the studies only look at the aspects of quality system or issues relating to technical elements of products. Some researchers argued that there is a relationship between quality and financial performance. In addition, prior research on quality has been implemented in organizations from developed countries in the West or in Japan, and not much attention paid to organizations in newly emerging countries, such as Vietnam.

Vietnam is becoming one of the fastest growing economies in the World. The success of Vietnam comes from its economic renovation policy implemented in 1986. This policy was expected to turn Vietnam into a market economy from a closed, centrally planned economy. However, Vietnamese companies are still confronting with a variety of challenges coming from their integration into the regional and world economies, such as stiff competition and customers' high

requirements. Thus, producing products/services with high quality which is able to be competitive in the local and global marketplace is a prerequisite for Vietnamese companies. In other words, Vietnamese companies need to build systems of quality management, and TQM application is one of the best approaches. Thus, many companies in Vietnam have been carrying out TQM to enhance their position in the marketplace and to achieve their long-run success in a tough competitive and unstable environment.

Therefore, the objective of this research is, based on relevant literature reviews, to provide a conceptual model that integrates TQM, competitive advantage, employee satisfaction, and firm financial performance in the context of Vietnamese manufacturing companies. More specifically, the present study attempts to (1) identify the salient TQM dimensions; (2) examine the relationship between TQM and competitive advantage; (3) investigate the relationship between TQM and employee satisfaction; (4) examine the relationship between TQM and firm financial performance; (5) investigate the relationship between competitive advantage and firm financial performance; (6) and investigate the relationship between employee satisfaction and firm financial performance.

BACKGROUND

Quality and TQM Concepts

Actually, a number of quality concepts have been introduced by TQM experts and researchers in the literature. According to Deming (1982), quality management should be based on 14 principles including design of product, specification of the service offered and improving the quality of the working environment. His philosophy on quality improvement, analysis and statistics are applied by Japanese businesses. Juran (1992) emphasizes the phrase "fitness for use" to define the meaning of quality. He also went further to indicate necessary steps for quality improvement. Crosby (1979) prescribed 14 steps for quality improvement and initiated the concept of "zero defects". Saraph, Benson and Schroeder (1989) have condensed eight TQM-related factors. Kanji (1996) constructed a pyramid model based on his belief that in order to increase customer satisfaction, companies have to concentrate on all aspects of their operations such as the importance of leadership and employee involvement in quality improvement.

Dean and Bowen (1994) have reviewed the TQM literature and found that important components of TQM are customer focus, continual improvements, and team work. Each of these components will be carried out via a number of practices, such as gathering customer items of information and analyzing processes by applying specific techniques. Raffio (1993) indicated the importance of employee involvement and management commitment of TQM philosophy. Hill and Wilkinson (1995) viewed TQM as a customer penetrating strategy to enhance quality for gaining competitive advantage.

Powell (1995) views TQM as a cultural change which is supported by ingredients from Deming (1982), Juran (1992), Crosby (1979) and the American Baldrige Award, and introduces 12 characteristics of TQM, such as committed management, adopting and communicating about TQM, closer customer relations, closer provider relations, benchmarking, increased training, open organization, employee empowerment, zero failure mentality, flexible production, process improvements, process measuring.

The British Quality Association (BQA) offers three alternative definitions of TQM (Wilkinson et al. 1998). The first focuses on the so called "soft" qualitative characteristics, found in the work of US consultants such as customer orientation, culture of excellence, removal of performance barriers, team work, training and employee participation. From this perspective, TQM is seen as consistent with open management styles, delegated responsibility and increased autonomy to staff. The second BQA definition emphasizes the production aspects such as systematic measurement and control of work, setting standards of performance and using statistical procedures to assess quality. This is the "hard" production/operations management type of view, which arguably involves less discretion for employees. The third definition is a mixture of "hard" and "soft", comprising three features: an obsession with quality; the need for a scientific approach; and the view that all employees are to be involved in this process.

TQM in the Vietnamese Context

In order to be successful to integrate into the international markets, Vietnamese companies have to produce high quality goods. TQM has been applied in developed countries such as Japan and the US. However, it is still a new concept in Vietnam, although a number of Vietnamese companies have started carrying out TQM philosophy to produce high quality goods aimed at gaining their competitive position satisfying both local and foreign consumers' requirements (Dinh, Igel & Tritos, 2005).

The TQM philosophy has been implemented by Vietnamese companies under a variety of operations such as ISO 9000, ISO 14000, 5S, HACCP, GMP, and the Vietnam Quality Awards (Nguyen, 2004). Among which ISO 9000 is the most popular. ISO 9000 was introduced in Vietnam in 1996. Since July 2004, there were 1895 certificates, in which 1275 certificates were ISO 9000:2000, 495 certificates of ISO 9000:1994, 61 certificates of ISO 14000 and 64 certificates related to other quality systems such as GMP, HACCP, OHSAS, SA 8000, SQF 2000, and QS 9000 (Vietnam Productivity Center, 2004).

ISO certificates have been promulgated in 18 manufacturing sectors (i.e., arts and crafts, printing, seafood, petro-chemistry, packing, wood, shoe, rubber, transportation instruments, plastics, consumer goods, glass-ceramic, chemical, pharmacy, textile-garment, mechanical-metallurgy, electric-electronic, and food-agriculture), six trading and service sectors (i.e., construction, trading,

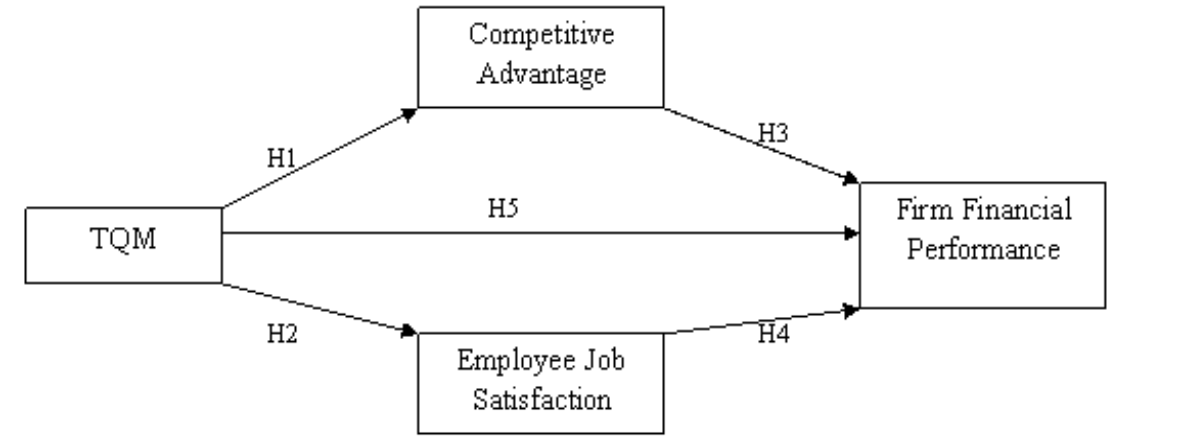
transportation, information, engineering, and other services), and recently extended to other sectors such as administration, health, training and education (Vietnam Productivity Center, 2007).

It is evident that an increasing number of Vietnamese companies (after Vietnam became a formal member of the World Trade Organization at the beginning of 2007) has been realizing that TQM philosophy can bring about competitive advantages for them in order to enhance their market, financial and strategic position, both domestically and internationally. Put it another way, these companies are viewing TQM as a valuable tool to improve quality, reduce cost, increase productivity, gain competitive advantage and employee job satisfaction, and earn better financial performance.

CONCEPTUAL MODEL

The successful implementation of TQM can bring about high quality products and services, reduced costs, more satisfied customers and employees, and better financial performance (Garvin, 1988; Hendriks & Singhal, 1997; Phillips, Chang & Buzzell, 1983; Walton, 1986). Buzzell and Wiersema (1981) implemented a research concentrating on the relationship between advertising, price, and product quality and market share. The results from their study indicated that there was a strongest relationship between product quality and market share. Companies with better product quality increased their market share five or six times more than companies with lower product quality. In addition, a reputation for high quality also decreases the elasticity of demand. Companies manufacturing high quality products can achieve higher profit margins.

Figure 1: Conceptual model



Many companies are required to pursue TQM due to stiff competition in order to survive and succeed in business environments (Hawkes & Adams, 1995). Oliver and Wilkinson (1989) gave evidence that almost all of the major British manufacturing companies and all Japanese-owned firms were either implementing some version of TQM or considering it. To meet the challenges of the new global environment, many companies in Vietnam have also started considering quality as an integral part of their business plans. Without quality, few companies can remain competitive in the constantly changing global and local market-place.

TQM and Competitive Advantage

Powell (1995) and Savolainen (2000) argued that TQM can make contribution to performance improvement by developing assets that are specific, creating socially complex relationships that are rooted in the history and culture of the company, and producing tacit knowledge. These activities are in line with the resource-based view, which can generate sustainable competitive advantages for companies (Barney, 1991; Grant, 1991).

According to Winter (1994), TQM can create a favorable environment that encourage learning behavior in the organization. Powell (1995) argues that it is very difficult for other companies to fully replicate TQM implemented by the company, because it creates certain isolating mechanisms that hinder the other companies from reproduction. In line with Powell (1995), Savolainen (2000) also contends that a commitment to TQM can bring about an inimitable competitive advantage because of formation of routines and guidelines by the company making it difficult if not impossible for competitors to mobilize resources to successfully reproduce the same strategy. Therefore, TQM has become an important competitive tool under the resource-based view. In the same vein, Rose and Ito (1996) indicate that knowledge creation based on TQM-oriented activities can create distinctive competencies for organizations. Thus, in this study, the first hypothesis is set up as follows:

H1: TQM is positively related to competitive advantage in manufacturing firms

TQM and Employee Job Satisfaction

One of the primary components of TQM is customer satisfaction. Customer satisfaction can be measured by an organization's ability to meet and exceed its customers' expectations. This requires the organization to keep intimate contact with customers via customer relationships (Hauser & Clausing, 1998). In addition, customer satisfaction is often based on the interactions between front-line employees and customers. This can be done by empowered and highly motivated employees who are satisfied with their jobs as a result of their empowerment, involvement, and perception of the emphasis that the organizational culture places on quality. Schlesinger and Heskett

(1991) and Schlesinger and Zomitsky (1991) recognized that employees' service quality perception positively relates to both job satisfaction and employee self-perceived service capability. Also, Fulford and Enz (1995) found employee perception of empowerment to have an impact on employee loyalty, concern for others (including customers), and satisfaction. The implication of this finding is that enhancing employee service capability through empowerment contributes to employee job satisfaction, job commitment, pride of workmanship, and what Anderson, Rungtusanatham and Schroeder (1994) called employee fulfillment or the degree to which employees feel that the organization continually satisfies their needs.

H2: TQM is positively related to employee job satisfaction in manufacturing firms.

Competitive Advantage and Firm Financial Performance

Competitive advantage has been very often mentioned in most business books and journals. According to Ansoff (1965), competitive advantage can be defined as the properties of individual product/markets that can bring about a strong competitive position for companies. Uyterhoeven, Ackerman and Rosenblum (1973) and Hofer and Schendel (1978) defined competitive advantages as a special formula based on which a firm utilize its skills and resources to an individual product or market. Porter (1985) argued that a competitive advantage refers to organizational factors enabling a firm to outperform its competitors, that remaining competitive advantage must be the focus of a firm's competitive strategy, and that value creation is the way to achieve it.

Competitive advantage grows fundamentally out of value a firm is able to create for their buyer that exceeds the firm's cost of creating it. Value is what buyers are willing to pay, and superior value stems from offering lower prices than competitors for equivalent benefits or providing unique benefits that more than offset a higher price (Porter, 1985, p. 3).

Under the resource-based view, competitive advantage comes from superior resources (Barney, 1991; Wernerfelt, 1984). Collis and Montgomery (1995) go further to state that "Competitive advantage, whatever its source, ultimately can be attributed to the ownership of a valuable resource that enables the company to perform activities better or more cheaply than its competitors". In addition, according to argument by King (2007) firm sustain competitive advantage is likely to create better financial performance than its competitors'. This argument is strongly supported by Zhang (2000) that TQM implementation can bring about competitive advantages for the firm, which in turn leads to better financial performance. Thus, the following hypothesis is established:

H3: Competitive advantage is positively related to financial performance in manufacturing firms.

Employee Job Satisfaction and Firm Financial Performance

Employee job satisfaction is viewed in modern management theory as one of the most critical drivers of quality, customer satisfaction and productivity. A variety of studies, theoretically and empirically, have concentrated on the effects of employee job satisfaction on company performance. In the literature of TQM, many authors contended that satisfied employees have high motivation to work effectively and to form a professional attitude towards their work (e.g., Eskildsen & Dahlgaard, 2000). They also have more responsibility for continuous quality improvement efforts that can be likely to lead to customer satisfaction.

Employees have to be focused by internal marketing (Gremler, Bitner & Evan, 1994). The product/service delivery chain that creates value to customers needs to be a system consisting of closely interrelated and mutually supportive subsystems. In such a system, its subsystems have to work effectively together in order to continuously satisfy its employees as internal customers. A variety of studies in the service industry have found evidence for a positive relationship between employee job satisfaction, customer satisfaction and firm performance. One of the successful systems is the "service-profit chain" (Heskett, Sasser & Schlesinger, 1997) that consists of relationships among employee job satisfaction, customer satisfaction and loyalty, and firm performance.

H4: Employee job satisfaction is positively related to financial performance in manufacturing firms.

TQM and Firm Financial Performance

TQM is considered a management philosophy integrating all departments and functions at all levels of the organization aimed at continuously improving the quality of goods and services delivered to its customers (Aldakhilallah & Parente, 2002). Furthermore, TQM can be viewed as an effective weapon for firms to gain and retain competitive advantage by concentrating on the maintenance and continuous quality improvement of closely correlated components in the firms in attempts to meet or exceed customer expectations (Pheng & Teo, 2004). Thus, it is obvious that for the past few decades, numerous companies have been using TQM to seek and achieve competitive advantages and better performance throughout the World markets (Love *et al*., 2000).

In the literature of TQM, a number of survey studies have recently focused on the relationships between the TQM important components and firm financial performance. Studies such as Ahire, Golhar and Waller (1996), Flynn *et al*. (1994), Grandzol (1998), Parzinger and Nath (2000) and Powell (1995) have shown that firm financial performance was positively related to top management commitment and employee empowerment. However, other studies for example Wilson and Collier (2000) have found that leadership commitment was not positively related to financial

performance, and Li (1997) indicated that this factor was not positively correlated with service quality performance. Although conflicting results can be observed in various studies in the literature of TQM with respect to relationships between the TQM components and firm performance (Longo & Cox, 2000), the following hypothesis is set up in this study:

H5: TQM is positively related to financial performance in manufacturing firms.

CONCLUSION

Producing products/services with high quality is considered one of the primary drivers for determining the success of firms in general and firm financial performance in particular. TQM has been applied in developed countries such as Japan and the US. However, it is still a new concept in Vietnam, although a number of Vietnamese companies have started carrying out TQM philosophy to produce high quality goods aimed at gaining their competitive position satisfying both local and foreign consumers' requirements.

Nowadays, Vietnamese companies are integrating into the World market. To gain and sustain competitive advantages in this highly competitive market, it is thus crucial for Vietnamese firms to understand in-depth the relationships between TQM and firm financial performance. This paper attempts, based on an extensive review of relevant literature, to provide a conceptual model that integrates four important constructs in the context of manufacturing firms in Vietnam, such as TQM, competitive advantage, employee satisfaction, and firm financial performance.

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DEVELOPING SOCIALLY RESPONSIBLE MANAGERS: A PROJECT

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ABSTRACT

This article describes a project used in a business ethics class that has students investigate social problems that contribute to unethical professional conduct. Proactive intervention in these problems demonstrates managerial social responsibility in business and acts to diminish pressures that result in a loss of productivity and unethical behavior.

Students choose an area of concern, such as alcoholism or gambling addictions, and research how this problem affects the local community. They use both secondary resources from periodicals and Internet sites and primary information from individuals active in the area of interest. The project results in a deeper understanding of social problems and tools to meet the needs of colleagues and employees.

INTRODUCTION

Business people are susceptible to the stresses and dysfunctions of modern life as are all professions. But the consequences for managers in business may be more severe because of the influence they have at their workplace. Education can enhance student awareness of social problems and their impact on employees, businesses, and the community. This paper describes a project in which students provide in-depth information about the extent of a social problem in the local community, the social services available, and the potential ways that a business can be involved in mitigating the problem.

EFFECT OF SOCIAL PROBLEMS ON WORKPLACE, COMMUNITY, AND ETHICAL JUDGMENT

Professional ethics has a multifaceted connection to social problems. There is clear evidence that social problems impair workplace job performance. In fact, there is some research that suggests that characteristics of work environments augment social problems. Stress, alienation, and a work

culture that accepts and encourages drinking are shown to be factors in alcohol abuse and alcoholism (Roman and Blum 2002, 54-55). Thus there may be characteristics of some firms that place their employees at particular risk. The costly deadlines and fierce competition that lowers profit margins on accounting, auditing, and consulting work are the types of factors that increase accountants' stress. Unethical shortcuts and lack of due professional care may be the symptoms of individual coping mechanisms gone awry. In addition, some social problems have a more direct connection to unethical behavior. "Have you ever committed, or considered committing, an illegal act to finance gambling?" is one of the twenty questions that Gamblers' Anonymous includes to help a person decide if he or she is a compulsive gambler (2008, 1). However, many social problems are similarly costly and place pressure on individuals to engage in fraud or embezzlement either to cover up problems or to continue involvement in addictions.

A National Institute of Health publication on alcoholism presents the case for a proactive stance in the workplace in the specific area of alcohol use, but the reasoning can apply to many other areas:

- The majority of adults are employed, making the workplace an ideal setting to reach a large population.
- Full-time employees spend a significant proportion of their time at work … The likelihood that evidence of problem drinking will become visible to those who might have a role in intervention also is increased.
- Work plays an important role in most people's lives. Because many adults' roles in the family and community are dependent on maintaining the income, status, and prestige that accompanies employment, the relationship between the employer and the employee contains a degree of "leverage" … (Roman and Blum, 2002, 50)

Thus the workplace may be both a primary place affected by social problems and a primary place for intervention to begin.

Consider in more detail the workplace impact of alcohol abuse and alcoholism. The National Institute of Alcohol Abuse and Alcoholism (NIAAA) provides an oft-quoted estimate from 1998 of the costs of alcohol abuse and alcoholism at $184.636 billion, the largest single category of which is $87.622 billion of lost productivity (2000, 68). The organization Ensuring Solutions to Alcohol Problems associated with the George Washington University Medical Center provides an Alcohol Cost Calculator (2008) which highlights the cost to an individual business, adjusting the cost for three factors: industry, state in which the business is located, and number of employees. On average the Alcohol Cost Calculator estimates 9.1% of employees to be problem drinkers, but the range in from 5.2% in the economic sector of Public Administration to 14.9% in Leisure, Hospitality and the Arts. Further, “people with alcohol problems seek emergency room attention 33 percent more often than people without drinking problems and stay in the hospital almost one-and-a-quarter days

longer." (Ensuring Solutions, 2008). A business with as few as 255 employees is estimated to have alcohol-related health costs above $100,000. These costs include both direct costs from productivity losses, health care, and employee assistance programs as well as indirect costs from increased worker turnover, additional supervision, friction among employees and increased liability theft and fraud.

Explicit mention of social problems can be found in public information in a regulated segment of business professions: the certified public accountant (CPA). For example, enforcement actions against CPAs by the Texas State Board of Public Accountancy include the following:

- On September 22, 2006, the respondent pleaded guilty to driving while intoxicated with a child under 15 years of age. . . (2007, 3)
- The respondent pled guilty to domestic battery and criminal trespass. (2003, 12)
- The respondent must undergo psychiatric treatment within 90 days of the Board order. If ongoing treatment is recommended, the respondent must submit a written report regarding his treatment every three months after the Board order. (2002b, 11)
- On December 18, 1985, the respondent was convicted of fifteen counts of conspiracy to traffic in illegal narcotics…The respondent's 1985 enforcement investigation was not cleared prior to reinstatement and the respondent practiced public accountancy in an unregistered firm with an improper name. (2002a, 9)

Domestic violence, alcoholism and drug abuse are just three examples of social problems that result in violations of the Code of Professional Conduct for the state of Texas. Professional ethics begins with judgments made by individuals. The social problems of managers and their employees affect these judgments and impact the workplace.

THE PROJECT

Objectives

The overall purpose of the project is to familiarize graduate business students with the propensity of personal problems such as alcohol or drug abuse and depression to alter the *pressure* leg of the fraud triangle. The authors have used this project in their graduate class in Professional Ethics to provide students with in-depth information about the extent of a social problem in their community, the social services available, and the potential ways that they and their businesses can be involved in meeting needs. This project gives students concrete steps for prevention, intervention, and remediation in the areas studied that semester and an understanding of how to address other relevant social issues. The goal of developing a proactive attitude toward social problems both

promotes self-awareness and provides information that accountants need to ethically manage the employees they supervise.

By including this project on social problems in our ethics class, the authors expect to accomplish the following objectives:

1. Students will understand that problems of professionals and other employees affect the workplace through their effects on competence, productivity, and ethical behavior.
2. Students will understand that accountants, other business professionals, and their employees have the same problems as any community member.
3. Students will understand how ethical judgments and actions are improved when social problems are not a contributing risk factor in the decision-makers' lives.
4. Students will understand that business ethics promote their assistance of colleagues and peers in the workplace.

Assignment

Assume the role of manager of a business in the local community. In this role as manager, you learn that your newest employee and/or the employee you just laid off (choose one)

1. cannot read.
2. is homeless.
3. has AIDs.
4. is addicted to drugs.
5. is alcoholic.
6. is hungry.
7. has a mental illness.
8. has an abusive spouse.
9. has a pregnant unmarried teenaged child.
10. (a similar topic of your choice).

Required:

1. A 10 page paper that:
    a. Establishes the extent of the problem in the community.
    b. Discusses the support available, including specific programs or agencies, contact information, qualifications, application process, and the type and extent of help provided.
    c. Discusses opportunities for businesses to be involved in the support.

d. Discusses opportunities for individuals to be involved in the support.

2. A one-page handout for a person with the need so he or she would know what to do next.
3. A one-page handout to educate employers to know how to help its employees / ex-employees.
4. A one-page handout to solicit volunteers, funds, and other donations in support of this need.
5. A 1-2 page reflective paper on what you have learned from this project.
6. A 30-minute presentation for the class in the form of a training session (appropriate to your role as business manager) disseminating the information you have gathered and practical ways to address your chosen social problem.

You must include in your sources for the paper and/or presentation:

1. An interview with a professional or volunteer who works locally in your area of need.
2. An interview with a person who is currently receiving support for this need or who has previously received support for this need.

You must complete the training program for research with human subjects available at http://phrp.nihtraining.com/ and complete the form for approval of your project by the university's Advisory Committee on Human Experimentation.

Implementation Guidance

This project is adapted from a suggestion associated with the textbook *Perspectives in Business Ethics* by Laura P. Hartman (2005) in which students volunteer and serve in community service programs. However, this project emphasizes students' roles as future professionals and managers. Thus, students interact with not-for-profit organizations in a manner similar to how they would deal with these issues in the actual workplace instead of engaging in volunteer work. This avoids one of the problems endemic in service learning - having students engage in activities for business course credit that do not actually develop or apply any business skills (Zlotkowski and Rama 1998).

This project represents 20 percent of the course grade and provides an opportunity for graduate students to work in teams, produce a lengthy professional report, both written and oral, as well as three targeted handouts that have an immediate, practical use. In addition, the students reflect on the project individually as a way to encourage students to tie the project to the overall course objectives. This project has been used regularly in the classroom with the student-selected topics such as the following: Teenage Pregnancy, Literacy, Hunger, Alcohol Abuse, Drug Abuse, Mental Illness, and Domestic Violence. Topics for this project are chosen by students with the assistance of the instructor. We believe it is important for the students to research topics of interest to them.

Ironically, the team that studied teenage pregnancy in spring 2002 included a student whose teenage daughter came home from college pregnant the following semester. By selecting a topic of interest to her, this student had laid the groundwork for being able to handle her own complex situation. In addition, the course in which this project is used is a required course in the graduate accounting program and an elective, with no prerequisites, in the MBA program. Thus each semester the team approach of this project provides a good way to mix the two streams of students: accountants and other business professionals.

Typical questions students have about the project's scope include:

1. How large a region should they survey for resources?
2. How widely or narrowly should they focus on a particular problem?
3. How specific should their handouts be to a particular workplace setting?

The authors' preference has been to define projects so students will be able to get concrete information in a narrower scope project, rather than general information in a wider scope project. For example, the team on teenage pregnancy emphasized resources for a pregnant high school student in each of the two large communities in the area, leaving out both the smaller communities and teenagers who were drop-outs or already high school graduates. Since our project requires one face-to-face interview with a service provider, most of the projects emphasize the largest or primary service provider, with ancillary information about other resources in the community.

It is important to keep students on a schedule for completion of this project, particularly because of the requirements of our university for approval of the use of human participants in the research, as discussed below. Each semester we have been prepared to help students find cooperating agencies and individuals, but students have never needed any help in this regard. Social service agencies and not for profit organizations have always been eager to communicate their mission and publicize their resources through this project and have cooperated fully. While we have not had repetition of topics (through no contrivance of our own), we were prepared to discourage the study of a topic done in the previous year in order to spread out the contacts made in the community and avoid becoming an annoyance to any particular group. Larger programs that use this project may want to be more directive in topic assignment or require instructor approval of interviewees to accomplish this same goal.

Human Subjects in Research Projects

All research investigators involved with human subjects at our university are required to complete a training course entitled “Human Participants Protection Education for Research Teams” provided by the National Institute of Health. Although the procedures in this project do not involve physical experimentation, any time human participants are involved as a part of a research project

their welfare and rights should be considered. Interviews of professionals, volunteers, and participants involved with the social agencies contacted by students can touch on sensitive and private information. Obtaining appropriate consent from participants is an example of one topic explained in the training course and a crucial step in protecting both researchers and subjects. Completion of the training course and application to the university committee for approval of the research plan provide students with valuable lessons in recognizing and protecting the rights of their human subjects.

Because students are interviewing and interacting with human participants as part of their research for the project, we believe it is very appropriate to include some training concerning protection of rights of subjects as well as researchers. Too often we, as educators, either ignore or take for granted this important topic. The on-line training provided by NIH introduces students to a wealth of information on dealing with human subjects. Included in the tutorial are topics such as recognition of when human protection is necessary (e.g. under-age participants or sensitive material), privacy, confidentiality, and informed consent. Even after completing the on-line tutorial, students needed supervision to ensure they were following procedures necessary to protecting the subjects' rights. Students were required to present a plan explaining how they were going to protect privacy and confidentiality when necessary and consent documents were approved before subjects were approached.

STUDENT FEEDBACK ON THE PROJECT

Students report support for the project, both in a survey providing feedback on this project after the end of the semester and in their reflective papers. Of the 12 surveys (see Appendix 1) returned (out of 24 in a recent class) all but one student agreed or strongly agreed that they would recommend using this project in future classes (see Table 1).

TABLE 1

PANEL 1: STUDENT ATTITUDES TOWARD SOCIAL RESPONSIBILITY (n = 12)	Strongly Agree	Agree	Disagree	Strongly Disagree	No Opinion
Employee assistance programs for social problems are helpful to employees.	2	8	2		
Employee assistance programs for employees have more costs than benefits for businesses.			5	5	2
Businesses have no responsibility for helping employees with their personal or family problems.			6	5	1
Social problems have an impact on the ethical decision-making of the person with the problem.	2	8	2		

TABLE 1

PANEL 1: STUDENT ATTITUDES TOWARD SOCIAL RESPONSIBILITY (n = 12)	Strongly Agree	Agree	Disagree	Strongly Disagree	No Opinion
People with social problems are more likely to take advantage of an opportunity for unethical conduct.		9	2		1
People with social problems are more likely to rationalize about their unethical conduct.		9	3		
People with social problems are more likely to feel a stronger perceived need to commit unethical acts.		8	2		2
PANEL 2: STUDENT ATTITUDES TOWARDS THE PROJECT (n=12)	Strongly Agree	Agree	Disagree	Strongly Disagree	No Opinion
The project enhanced my understanding of business ethics.	7	4	1		
The project enhanced my understanding of the problem I studied.	8	4			
The social problem I studied impacts local businesses.	9	2	1		
The social problem I studied impacts employees at businesses like mine.	9		1		2
The social problem I studied impacts managers at businesses like mine.	8	2	1		1
If I had an employee with the problem I studied, I would know how to address the problem with him or her.	9	2	1		
If I had an employee with the problem I studied, I would be able to make helpful referrals.	10	2			
I have changed my point of view of this social problem because of completing this project.	3	4	5		
I would recommend including this project in future classes in Professional Ethics.	7	3	1		1

Respondents to the survey mirrored the total group of students who took the class (see Table 2). 29 percent of respondents are male; 36 percent of class participants are male; 29 percent of respondents are in the MBA program; 33 percent of class participants are in the MBA program. Additional characteristics gathered indicated that half of the respondents were in the 30 to 45 age range; half had a business (non-accounting) undergraduate degree, and more than half had at least 10 years of work experience and had supervised others on the job. Thus these respondents were graduate students with a broad academic and business base for evaluating this project.

The impact of this project on students is enormous. Fifty-eight percent reported changing their "point of view of this social problem because of completing this project." Every respondent felt

the project aided in their understanding of the social problem and gave him or her information to be able to make referrals.

100% agreed or strongly agreed:

- If I had an employee with the problem I studied, I would be able to make helpful referrals.

92% agreed or strongly agreed:

- I would recommend using this project in future classes
- The project enhanced my understanding of business ethics
- If I had an employee with the problem I studied, I would know how to address the problem with him or her.

84% agreed:

- The social problem I studied impacts managers at businesses like mine.

75% agreed:

- The social problem I studied impacts employees at businesses like mine.

We felt that the students' perspective on the project would be affected by their attitude towards the concept of the social responsibility of business, and we also obtained information about these attitudes at the end of the course.

92% agreed:

- The social problem I studied impacts local business

86% agreed:

- Employee assistance programs for social problems are helpful to employees.
- Social problems have an impact on the ethical decision-making of the person with the problem.

75% agreed:

- People with social problems are more likely to take advantage of an opportunity for unethical conduct.
- People with social problems are more likely to rationalize about their unethical conduct.

67% agreed:

- People with social problems are more likely to feel a stronger perceived need to commit unethical acts.

50% agreed:

- Businesses have a responsibility for helping employees with their personal or family problems.

The results of this portion of the survey provided some information to us about the applicability of this project independent of students being committed to business involvement in social problems. Although half of the students felt that it was not a business responsibility, they remained favorable towards the project. Comments from their reflective papers include:

- After this project, I know I would deal with the situation described at the first [an employee she supervised was a victim of spousal abuse] differently. I am aware of the warning signs, which my employee clearly displayed. I feel armed with information that, if needed, could make a difference in the lives of those I touch. I have already approached our Human Resource department … to discuss bringing educational presentations on domestic violence to our workplace.
- While working on this project I went to …'s website and looked at the board members and was pleasantly surprised that I recognized many people on it. It made me feel good to know that many of my peers and acquaintances are working together to prevent domestic violence.
- Our group project opened my eyes to the prevalence of mental disabilities in our society. I was also surprised to see how many employers fail to recognize this as a potential employee morale problem and, likewise, their reluctance to provide assistance. But I was pleased to find there is a wealth of knowledge about mental health available … and low cost or even free counseling services readily accessible.

Students' responses have convinced us that this project is making an important contribution to students' ability to apply the ethical principles discussed in class. And since our university is a

regional teaching college, most of whose graduates remain in the community, we believe this project is beneficial to the community as a whole as well.

CONCLUSION

Several aspects of the project requirements result in students' understanding of social issues and their impact on the workforce. First, the range of topics selected in each class gives students a broad view of social issues that affect the corporate community. Second, the project gives students an opportunity to identify the types of actions that can be taken by a corporation to assist its employees with social issues. Third, they have the opportunity to see actions that individuals can take as volunteers in their communities. Based on the feedback from our students, we believe that the project is fulfilling a needed role in moving from the "textbook" study to practical application in the community.

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Table 2: Description of Respondents to Student Feedback Questionnaire (n=12)		
1.	Graduate Program:	
	MBA:	4
	MPA:	7
	Unknown:	1
2.	Gender:	
	Male:	4
	Female:	7
	Unknown:	1
3.	Age Group:	
	Under 30:	1
	30 to 45:	6
	Over 45:	3
	Unknown:	2
4.	Undergraduate Major:	
	Accounting:	3
	Business, non-accounting:	6
	Non-business:	1
	Unknown:	2
5.	Full Time Work Experience	
	1 to 5 Years:	1
	6 to 10 years:	2
	More than 10 years:	7
	Unknown:	2
6.	Supervisory Experience	
	Currently Supervise Others:	3
	Have Supervised Others, but not currently:	4
	Have not Supervised Others:	3
	Unknown:	2

EXHIBIT 1

DWI? -PI? -LOST YOUR SPOUSE? -LOST YOUR JOB? DO YOU DRINK? YOU MAY HAVE AN ALCOHOL PROBLEM!!!!!

Have you ever had a DWI, Dill or PI? Have you ever been fired from a job, do you have trouble in your personal relationships? Do you frequently think about drinking or partying? If you answered "yes" then you have a drinking problem. Do you want help? The following paragraphs will lend a hand in obtaining assistance.

Make an appointment with an Alcohol Counselor:

The first step is to determine the extent of your problem. You should schedule an appointment with a local alcohol counselor who will determine your needs based the extent of your problem. She will determine the necessary treatment plan based on the severity of your alcohol problem and the following constraints.

Who to Contact for Counseling:

Do you have the money to pay for your care? -If so contact ***** Hospital near the ***** at (***) ***-****. The address is *****. The counselors will determine your treatment based on an evaluation of your problem, needs and constraints. Or you can.

Contact a private alcohol counselor who will schedule a counseling appointment and determine your treatment plan. Outpatient treatment plans always include Alcoholics Anonyms (AA) meetings. In order to be successful you must be serious about your treatment regimen. One of the local counselors one can contact is ***** with the ***** Counseling Center in *****. He can be reached at (***) ***-****. His office is located at *****.

Are you broke but in need of help? Contact a state supported facility such as *****, (***) *** - ****. Counselors will determine the prescribed treatment plan. Your financial status will be assessed to determine the ability to pay.

Alcohol Assistance Programs in the Permian Basin: A Guide for Area Residents.

Counselors: Treatment Centers:
[Specific names of counselors and treatment centers with contact information are listed.]

EXHIBIT 2
HANDOUT TO EDUCATE EMPLOYERS

Someone in Your Company May be Abusing Alcohol

Signs of Alcohol Abuse: Absenteeism on Mondays, tardiness, erratic behavior especially in the afternoons, smell of alcohol, excess use of mints, leaving work early, poor job performance.
Risks to company of untreated alcoholism: Work goes undone, mistakes are made, morale is lower, and the possibility of employee theft is increased. It is important to realize that your liability is heightened if the employee is in a position to harm others. It is important to have an effective drug and alcohol abuse policy. Zero tolerance policies might be necessary for some occupations: health field, truck drivers, police officers, firefighters, etc.

Benefits of treating before termination: The goal is to provide a helping atmosphere. Employee morale is improved for all employees because they believe you care about them. Productivity is increased and when employees are helped they are encouraged to help others. An Employee Assistance Plan encourages employees to seek help before the problem interferes with the work place. An EAP allows the employees to receive counseling without the employer knowing the specifics of the problem. A third party provider is called and the employee is referred to a treatment center. Employers must treat alcoholism as a treatable illness that can be cured. It is important for employee morale that employees know their illness is not viewed as a personality failure.

When intervention is necessary the following items may be helpful: Most people will deny they have a problem. Counseling for the intervener, before intervention, may make intervention go more smoothly. Each case will have to be handled in its own way. Remember each individual has different reasons for drinking and different ideas of how severe the problem is. Most employees must hit rock bottom before they will accept help.

Evaluate treatment centers using the following criteria: Published success rates, location, cost, specializations, length of treatment time and follow-up. Some inpatient treatment will increase success rate.

When termination of an employee is necessary: Remember alcoholics are covered under the American with Disabilities Act so you legally can't terminate an employee for alcoholism. Terminate the employee for the conduct: tardiness, absenteeism, poor work product, etc.

Where to find information about alcoholism: Treatment centers are listed in the yellow pages of all phone books. The web has several good sites such as: http://alcoholism.about.com, http://www.soberrecovery.com and http:/ /www.alcoholics-anonymous.org/

Other Support Opportunities: ***** accepts donations for individual clients. ***** Drug Abuse Program, ***** Treatment Center, ***** Community Centers and ***** Center of ***** County all accept donations, and they are tax-exempt. Volunteer opportunities are limited partly because most alcoholics want anonymity. The ***** Community Centers accept volunteer services.

EXHIBIT 3
HANDOUT TO SOLICIT VOLUNTEERS, FUNDS, AND OTHER DONATIONS
You Can Help Save a Life!!!

Facts:

- One in 5 [Name of State] admit to having some sort of alcohol-related problem.
- Alcoholism is the only disease that is 100 percent curable, but only 40 percent of the patients accept treatment.
- Alcohol is the most frequently used drug in substance abuse programs due to its ease of attainment.

Benefits to Contribution:

- Persons who volunteer to contribute time or money will have the comfort of knowing they played a role in enhancing the lifestyle of a person with a debilitating, yet treatable disease.
- People who contribute monetary funds can claim the money as a tax-deductible donation. *Contributing to Alcoholism Rehabilitation helps society by increasing the number of productive citizens and decreasing the number of societal parasites.

[Name of State] Facilities-Opportunities for Support:

- ***** Hospital - Personal friends and relatives may contribute their services to assist loved ones in their recovery.
- *****- Individuals may contribute cash donations on specific client's behalf.

- Community Centers - Facility will accept cash donations from individuals. Intern volunteers seeking LCDC degrees are encouraged to assist. Friends and family are welcome to assist staff in special events such as trips to *****.
- ***** House - Family encouraged to attend AA meetings with patient.
- ***** Center of ***** County - Accepts cash donations from community. Volunteers must have proper clearance to participate in patient care.
- ***** Drug Abuse Program - Cash donations accepted.
- ***** Personal friends and family may contribute volunteer services.

A BASIS FOR ASSERTING THE EFFICACY OF ALTERNATIVE ABILITIES IN PERSONNEL SELECTION

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ABSTRACT

Proponents of alternative abilities (sometimes referred to as multiple intelligences) have had little success convincing personnel psychologists that these cognitive measures should be used in personnel selection. These proponents have failed to demonstrate to personnel psychology's satisfaction that these alternative cognitive abilities add much to the predictive validity of general mental ability (i.e., psychometric g). This article suggests that, perhaps surprisingly, research in both personnel and cognitive psychology actually converge on the idea that job knowledge is the critical variable in predicting job performance, even more important than general mental ability. These various alternative abilities can be regarded as a more sophisticated articulation of the specific structure of this otherwise loose construct of job knowledge. Successful performance relies on the development of expertise in job knowledge domains. The implications for better understanding job knowledge and its role in personnel selection are discussed.

INTRODUCTION

In the world of personnel selection, as well as that of educational selection, general mental ability (GMA, also known as psychometric *g*) reigns supreme as the psychological measure of choice. Compared to other psychological measures such as motivation, personality, as well as other measures of cognitive ability, GMA has been shown to have the highest levels of predictive validity for both training and job performance (Hunter & Hunter, 1984; Ree & Earles, 1991, 1994; Schmidt & Hunter, 1998). Not only do other measures of ability fail to stand up to GMA, but they generally fail to add significant predictive power (i.e., incremental validity) beyond that of the general factor (Gottfredson, 1986; Ree & Earles, 1992; Schmidt, Ones & Hunter, 1992).

The ubiquity and efficacy of the general factor is to some extent a mathematical consequence of the intercorrelation among cognitive tests. People who do well on one type of cognitive ability test tend to do well on other types, too (Neisser, Boodoo, Bouchard, Boykin, Brody, Ceci, Halpern, Loehlin, Perloff, Sternberg & Urbina, 1996). This results in positive correlations among the various cognitive measures. Wilks (1938) demonstrated that the presence of such a positive manifold (i.e., positive intercorrelations) makes the general factor more or less inevitable as one increases the

number of tests in the battery. In the mid 1930s, an educational researcher brought some student data from tests of cognitive ability to Wilks and told him of a surprising finding. No matter how the researcher weighted the measures in a test battery, the scores resulting from the application of those weights seemed to rank order students the same. The weights made no significant difference on the students' rankings. After examining the mathematics behind this surprising result, Wilks(1938) presented a theorem that says, among other things, that when this positive manifold is present, as the number of tests is increased, the correlation between any two arbitrary linear composites for the battery converges to one. In other words, as Wainer (1976) put it, there comes a point very rapidly where "it don't make no never mind" how the individual components are weighted. You can weight the items so that they all load on one general factor, and there is no way to dispute that weighting mathematically. That means that when the conditions for Wilks's theorem are present, there is no way to argue mathematically against the general factor. Ironically, the more one tries to add a variety of ability measures to the battery, the more certain Wilks's theorem and, therefore, GMA are to manifest themselves. (Wilk's theorem also explains why adding items to a test increases the test's reliability.)

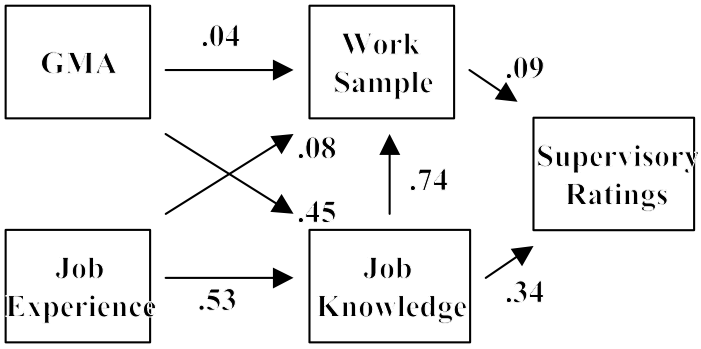
Despite the apparent mathematical inevitability of GMA in cognitive test batteries, many researchers believe that there are other important cognitive factors that could serve as useful determinants of job performance (e.g., Gardner, 1983; Neisser, 1976; Sternberg, 1985; Wagner, 1985). Carroll (1992) points out that even though the first principal component, GMA, accounts for the largest proportion of the variance in a test battery, it probably only accounts for not much more than half. This means that there is potentially plenty of room for improvement. Unfortunately, in the eyes of many personnel psychologists, this potential has yet to be realized. The most promising work, at least theoretically, has been in the field of cognitive psychology. Researchers such as Kyllonen and Chrystal (1989, 1990) worked on developing cognitive components tests into personnel selection batteries. As opposed to traditional tests, which measure alternative abilities, these tests attempt to measure internal cognitive structures and processes, such as working memory, declarative and procedural knowledge, and information processing speed (Anderson, 1983). While the question of whether or not these tests can add significantly to the predictive validity of GMA remains open, it has been shown that they themselves produce a positive manifold comparable to that of traditional ability tests. This in turn produces a first principle component that accounts for more than half the variance in the battery, just like GMA in traditional tests. What is more, that general factor correlates between .95 and .994 with GMA (Stauffer, Ree & Carretta, 1996). The implication is that these cognitive components tests appear to be measuring largely what traditional tests measure, that is, GMA.

JOB KNOWLEDGE TRUMPS GMA

Despite the fact that many personnel psychologists do not hold out much hope for new cognitive tests that can add significant predictive power to GMA (i.e., incremental validity), there remains good reason to believe that certain alternative abilities (e.g., Gardener, 1983, and Sternberg, 1985) could actually do better than GMA. The key lies in the often-overlooked fact that the vaunted predictive power of GMA is conditional. Schmidt and Hunter (1998) note this condition in their conclusion that GMA is the most valid predictor of training and job performance for applicants who are "*without previous experience in the job*" (p. 262, emphasis added). That is, when job applicants are relatively homogenous in terms of job experience and job knowledge, GMA predicts best who will gain knowledge more rapidly and therefore be more successful in the job. But when applicants differ in terms of experience and job knowledge, GMA loses much of its power to predict. What is often forgotten in discussions of the efficacy of GMA is that ability testing generally occurs at the entry level, where all applicants are equally knowledgeable (that is to say, equally unknowing). Therefore GMA's primacy does not easily extend into many staffing situations where job candidates are heterogeneous with respect to experience and job knowledge.

Figure 1 below illustrates how GMA is thought to translate into performance (Hunter, 1986; Schmidt, Hunter, Outerbridge, & Goff, 1986).

Figure 1



The key is job knowledge. At the entry level, candidates are more or less homogeneous in experience and job knowledge. So, as one would expect, the higher a candidate is on GMA, the faster and more effectively he or she would be expected to gain job knowledge. That translates into successful task performance, as captured in the model by work sample tests, and higher supervisory ratings. When candidates are not equal in terms of their experience and knowledge in a particular area, those differences matter more than GMA.

For certain personnel psychologists, this model dovetails well with Cattell's (1971) investment theory of intelligence (e.g., Schmidt, 1994). In the investment theory of intelligence, people take their GMA endowment and invest it in the accumulation of knowledge in specific knowledge content areas. Cattell's (1971) investment theory claims that there are two major (oblique) second-order factors that show up when the principle components from cognitive tests are rotated. These two correlated factors are crystallized and fluid intelligence. Fluid intelligence is thought to be the brain's basic reasoning capacity (i.e., a person's initial cognitive endowment). Crystallized intelligence is a set of developed cognitive skills (what I will call foundational knowledge) that is valued in a particular culture. Crystallized intelligence is obtained through the investment of fluid intelligence. People choose which cognitive skills they will invest in, how long they will invest in their development, and the intensity with which they make that investment.

For cognitive psychologists, this idea fits well with theories on the psychology of expertise (Bedard & Chi, 1992; Chi, 1988, 1989; Ericsson, 1994; Gobet, 1998). Theories of expertise would concur to some extent with investment theory but go on in more detail to explain how superior cognitive abilities supervene from this investment. Working in a content area and receiving quality cognitive experiences related to that content area for many years—the typical estimate is about ten years (Anderson, 1983; Gobet, 1998)—people attain expert status. Cognitively this is characterized by a well-developed, well-organized long-term memory. This well-developed long-term memory contributes significantly to the expert's cognitive efficiency when dealing in that content area, replacing GMA as the key cognitive attribute in determining successful performance within that content area.

A classic example of this comes from Chase and Simon's (1973) extension of DeGroot's (1946, 1978) work with chess novices and chess experts. They found that while the novices and experts they worked with were basically equal in terms of GMA, the experts had a distinct and significant advantage, a cognitive skill apart from GMA that made them much more efficient in solving chess problems. In one set of experiments, novices and experts were shown images of various chessboard configurations for a few seconds. Pieces were arranged on the board in various ways. After viewing a particular configuration, a subject would be asked to reproduce the configuration on a chessboard. While novices struggled trying to remember what individual piece went where, experts called upon their extensive long-term memory to link different pictures to various situations they had memorized. The novices tended to juggle several pieces of information in their short-term memories and soon found themselves unable to recall sufficient information to reproduce the situation reflected in the image. All experts had to do was note the similarity of the configuration to a specific situation, say, the Kolmogorov-Smirnoff move of 1941, draw the specifics from their long-term memory, and reproduce the configuration. Even if the configuration did not precisely correspond to a specific situation the expert had tucked away in long-term memory, it was much easier for the expert to modify a similar situation than it was for the novice to try to retain and process individual pieces of information. The expert had less to juggle in short-term

memory. Long-term memory carried most of the workload. A well-developed, well-organized long-term memory serves to improve cognitive efficiency above and beyond a person's GMA. While it is expected that GMA contribute to the speed and efficiency with which expertise is gained, expertise and the resultant cognitive efficiency are still simply a matter of tens of thousands of hours of quality experience in a particular subject-matter area. According to this view, it is possible for a person of lesser GMA to invest in a content area sufficiently to become more cognitively efficient and capable (i.e., more expert) than people of higher GMA who do not invest sufficiently in that content area.

Bedard and Chi (1992) enumerate the major findings of expert-novice research, what they call *invariants of expertise*. First, experts know more than anyone else about their specific subject-matter area or *domain* Second, experts have a well-developed, well-organized long-term memory that results in cognitive efficiencies. Third, experts perform better than anyone else in problem solving and other tasks in that subject-matter area. Fourth, the advantage experts have is confined to their subject-matter area. That is, being a good problem solver in one area does not make one a good problem solver in another. In fact, it is found that experts demonstrate exceptional problem-solving skills in their subject-matter area but show sloppy problem solving skills in other areas, much like any other novice (Anderson, 1983). For the purposes of personnel selection, we could easily call these the invariants of expert job knowledge. These principles have, for example, been demonstrated in studies of aircrew selection (see, e.g., Zelenski & Carretta, 1995). Important skills such as situational awareness and problem solving, as well as traditional measures of flight performance, were found to be primarily a function of flight experience and had less to do with GMA as experience levels went up. Among novices (i.e., new flight trainees) who undergo the same experience (i.e., the same flight training), GMA correlates more highly with end-of-training flight performance. But as pilots develop in their careers, those who get more flight experience tend to develop better flight skills.

TACIT KNOWLEDGE AS JOB KNOWLEDGE

It appears then that, rather than being at odds with each other, personnel and cognitive psychology actually converge on the idea that job knowledge is more important than GMA in performance within a specific context. This notion becomes particularly intriguing when we consider the role alternative abilities could play in selection. It has been suggested by personnel psychologists that Sternberg's (1985) constructs of tacit knowledge and practical intelligence are no more than forms of job knowledge (Ree & Earles, 1993; Schmidt, 1994; Schmidt & Hunter, 1993). This helpful, because the job knowledge construct as presented in selection models is somewhat vague, which is perhaps why cognitive psychologists like Sternberg are reluctant to equate it with tacit knowledge or practical intelligence in general. What cognitive psychology offers is the intriguing idea that this vague notion of job knowledge can be broken down into different types of knowledge.

That is, we can conceive of sets of knowledge that represent overlapping content areas beyond that of the visible task domain and declarative facts, which is what traditional job knowledge tests tend to measure (McCloy, Campbell, & Cludneck, 1994). For example, many jobs might require expertise in oral or written communication. Some jobs might require expertise in organizational politics or impression management. Other jobs might require expertise in controlling one's emotions or inspiring others to act. All of these represent content areas beyond that of specific job tasks that are believed to influence job performance. Novel skills and abilities such as emotional intelligence might be viewed as reflecting degrees of expertise in specialized knowledge domains that might manifest themselves in certain ways common to many jobs. Viewed in this way, it may be proposed that accomplishment in much of what we view as alternative abilities may proceed in much the same way as the development in expertise proceeds in more traditional domains. Research in tacit knowledge might provide a link between these alternative abilities and job knowledge.

As part of his triarchic theory of intelligence, Sternberg (1985) differentiates practical and creative intelligence from analytical intelligence, which is the type of intelligence he believes tests of GMA measure. It is practical intelligence that he and his colleagues have approached as primarily knowledge-based (e.g., Sternberg & Wagner, 1993; Sternberg, Wagner, Williams, & Hovarth, 1995; Wagner & Sternberg, 1985). Much of this knowledge, he believes, is not acquired through formal training. Such knowledge is referred to as *tacit* because it is difficult, if not impossible, to articulate. And because it is difficult to articulate, tacit knowledge is difficult to teach. People are pretty much left on their own to acquire it. While Sternberg sees tacit knowledge as comparable to the procedural knowledge in theories of expertise (Chi, Glaser, & Farr, 1988), he denies that tacit knowledge is, as personnel psychologists claim, simply job knowledge. Job knowledge, he claims, is made up of both declarative and procedural knowledge. Tacit knowledge is procedural. In fact, Sternberg considers tacit knowledge to be a subset of procedural knowledge. While he suggests that job knowledge and tacit knowledge overlap, that is, while some tacit knowledge may fall in line with traditional definitions of job knowledge, he denies that all tacit knowledge is job knowledge (Sternberg & Grigorenko, 2001). Given that we are not concerned with tacit knowledge that is unimportant to the job, it is difficult to claim that tacit knowledge relevant to the job is not job knowledge. It seems that the only clear distinction that can be made is that tacit knowledge is, by definition, strictly procedural while job knowledge is both procedural and declarative. This means that tacit knowledge relevant to successful job performance may be the procedural component and therefore simply a subset of traditional job knowledge. This notion is reinforced by Sternberg's insistence that tacit knowledge is "more than a set of abstract procedural rules. It is context-specific knowledge about what to do in a given situation or class of situations" (Sternberg & Grigorenko, 2001, p. 5). Given that we are interested in knowledge that leads to successful performance in specific contexts, it is difficult to argue that relevant tacit knowledge is somehow distinct from what we consider to be traditional relevant job knowledge. It may be true that traditional job knowledge tests do not measure this in precisely the same way Sternberg would measure tacit knowledge, but

perhaps few personnel psychologists would refuse to accept it as part of the overall job knowledge construct.

Sternbergs work in trying to find a place for tacit knowledge in personnel selection has established its predictive validity (Sternberg, 1997; Sternberg & Grigorenko, 2001). It has even demonstrated incremental validity over GMA. What it has not done is consider tacit knowledge in the way personnel psychologists consider job knowledge and demonstrate that it is indeed different from job knowledge. For example, what can be gleaned from a content analysis of the instruments used in that work is a sense that measures of tacit knowledge look very much like tests of job knowledge. Take for example the three items from a tacit knowledge instrument for a school principal reproduced in Sternberg and Grigorenko (2001). Each item presents a real-world problem peculiar to school principals and asks the examinee to rate the desirability of each of ten possible solutions to the problem. The first problem asks the principal how he or she would handle a case of overnight school vandalism that the principal has discovered before students have begun arriving. The second situation has the principal's school receiving a substantial grant, but a condition of the grant places the school in the position of having to spend $5,000 before they actually get the money. The third problem is that a teacher has written an angry letter full of bad grammar to the superintendent. The superintendent is concerned that a teacher would write such an unprofessional and poorly written letter and has asked the principal to get involved. It is not clear from these three items how this particular tacit knowledge instrument could not be regarded as a job knowledge test for school principals. Even though it could be that this type of knowledge is not explicitly taught, as Sternberg asserts, it is clearly knowledge relevant to the job and, therefore, should be considered job knowledge.

The work on tacit knowledge in the workplace has also failed to consider individual differences in experience among examinees in the way the Hunter-Schmidt model does (see Figure 1 above). Sternberg (1997), for example, cites a study conducted by Eddy (1988) where 631 U.S. Air Force basic trainees were given a tacit knowledge test designed for managers. Eddy correlated the trainees' managerial tacit knowledge scores with their scores on each of the ten subtests of the Armed Services Vocational Aptitude Battery (ASVAB). All but two of the ten correlations were significantly different from zero. Sternberg takes this and the fact that GMA correlates moderately with job knowledge as evidence that tacit knowledge is measuring something different. There are two problems with this interpretation. First, it is not clear why a group of predominately teenagers should be considered to have any kind of expertise in management. Theirs are the scores of management novices with little to no experience in the content area, which means that those scores should be more or less random. That in turn means that one should not expect those tacit knowledge scores to correlate with anything, which is precisely what Eddy observed. If they had been given some time in management situations and then tested to see what tacit knowledge they had gained, then we would expect to see differences in GMA translate into differences in job knowledge. But Eddy's study allowed for no time to be spent in a managerial experience, so there was no reason to

expect that differences in tacit knowledge corresponding to GMA should emerge. Second, even at that, it may be that GMA better predicts the acquisition of declarative forms of knowledge, and to the extent that traditional job knowledge tests measure declarative knowledge and tacit knowledge tests measure procedural knowledge, it may be true that GMA better predicts traditional job knowledge.

A COMMON GROUND

What Sternberg is basically arguing is that tests of GMA measure primarily analytical intelligence and that there is something more to successful job performance than analytical intelligence. He believes that analytical intelligence plays a major role in predicting successful job performance, but he also believes that tacit knowledge can add significant incremental validity to GMA. And he feels that tacit knowledge is substantially different than traditional job knowledge and that it is not correlated with analytical intelligence. Personnel psychologists argue that tacit knowledge can be considered job knowledge and can be expected to behave as traditional job knowledge behaves with respect to GMA and job performance. They claim that findings that GMA and tacit knowledge are uncorrelated are due to poor research design or statistical artifacts like severe range restriction. (Sternberg's samples tend to come from Ivy League students who are highly selected on the basis of GMA scores, Ree & Earles, 1993; Schmidt & Hunter, 1993.) Despite the differences in the two positions, there is sufficient common ground between the two views to begin assembling a more comprehensive view of job knowledge.

First of all, as suggested above, the Hunter-Schmidt model (Figure 1), Cattell's investment theory of intelligence (Cattell, 1971), Sternberg's (1985) triarchic theory, particularly its views on practical intelligence and tacit knowledge, and theories on the development of expertise and long-term memory (Anderson, 1983; Chi, et al., 1988; Ericsson, 1994; Gobet & Simon, 1998) all seem to agree that in the vast number of instances in personnel selection where candidates are heterogeneous in terms of their relevant experience, knowledge is the key to predicting successful job performance. The more expert a candidate is in relevant knowledge content areas, the more successful he or she will be. The question that really separates these different views is in their understanding of what this knowledge construct is all about. The key to bringing these diverse viewpoints closer together and developing a more useful adaptation of the Hunter-Schmidt model is to expand the notion proposed by Sternberg (1998) that all these different abilities and types of knowledge are products of some form of expertise development.

The idea of ability testing providing a snapshot of one's progress in cognitive skill development is one that even proponents of GMA have been offering for decades (Humphreys, 1992). For Sternberg (1998) there is little difference between the snapshot taken by an ability test and one taken by a knowledge or achievement test. Each yields a score that places the examinee on some point on a novice-expert continuum within a content domain, so even the most basic of ability

tests, especially tests of GMA, require some expertise to do well on them. Just as with knowledge, experience in the domain contributes to development of an ability. So one's standing on an ability is nothing more than a reflection of their expertise in a particular domain, which in turn is a function of their experience in that domain. Ability is knowledge for all but the most primitive of cognitive functions. The verbal and quantitative skills, for example, that make up the bulk of tests of GMA actually appraise one's development in these basic verbal and quantitative domains. Because knowledge in these basic verbal and quantitative domains is required for development (i.e., knowledge acquisition) in many other domains, GMA correlates with knowledge scores in those dependent domains. That is, the more expert you are in these requisite foundational domains, the more easily you can acquire knowledge in higher-level, dependent domains. This means that if one could map out the complex hierarchical structure of the most relevant domains that go into the performance of a particular job, one would be expected to find that these basic verbal and quantitative domains represented in a test of GMA would form foundational domains that service many (if not most) of the relevant higher-level domains. But because it is not possible to parse out the primitive cognitive abilities component in GMA from verbal and quantitative domain knowledge, we cannot simply cast GMA as just another knowledge construct or set of knowledge constructs in a modified Hunter-Schmidt model. It does, however, aid in understanding why, for example, some people score highly on verbal ability and not so well on quantitative ability, or vice versa, if we view GMA as being to some extent a measure of expertise in the basic verbal and quantitative domains. Some people invest their primitive endowment in acquiring basic quantitative knowledge. Others invest it in basic verbal knowledge. Others have better quality experiences or spend more time in one domain and not as much in the other. Reframing the Hunter-Schmidt model to reflect these findings from cognitive psychological theories of expertise could help us identify relevant domains and, therefore, jobs in which alternative abilities are more likely to make significant contributions.

Figure 2

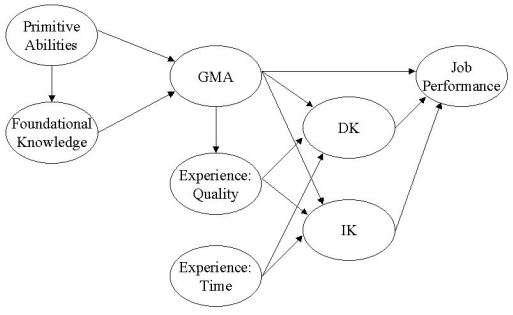


Figure 2 shows the modified Hunter-Schmidt model. It begins by suggesting that tests of GMA measure a combination of innate primitive cognitive abilities and development in certain foundational knowledge domains, primarily basic verbal and quantitative abilities. Because GMA reflects development in the foundational domains resulting from investments of primitive abilities, those abilities cannot be separated from foundational knowledge in GMA scores. So our selection model must use scores that confound primitive abilities with foundational knowledge.

The Hunter-Schmidt job knowledge construct is divided into independent and dependent knowledge to illustrate how certain knowledge domains might retain their relative independence from GMA. To the extent that a knowledge domain can be acquired without the foundational knowledge represented in tests of GMA, it will not be expected to correlate as highly with GMA. Such knowledge is considered independent knowledge (IK). To the extent that a knowledge domain requires this foundational knowledge, it is said to be dependent knowledge (DK). Despite this distinction, no knowledge domain is expected to be uncorrelated with GMA for a couple of reasons. First, GMA cannot separate foundational knowledge from primitive abilities, and primitive abilities are expected to influence knowledge development in any domain, to include foundational knowledge and independent knowledge. Second, foundational knowledge and the success in acquiring it are expected to help a person develop basic learning skills and strategies that will help them acquire knowledge in other domains, even if that knowledge is directly unrelated to the foundational knowledge.

Even though the distinction and operation of independent versus dependent knowledge offers some hope that we can identify knowledge domains representing alternative abilities that will provide significant incremental validity over GMA, they are redolent of the specific abilities-multiple intelligences arguments that have failed to demonstrate incremental validity and, therefore, may not actually be as promising as they seem. But the distinction is fundamentally important. It reframes the question in terms of expertise/knowledge development and, in concert with that perspective, offers a perhaps more straightforward rationale for the expectation that there are job-relevant cognitive abilities not accounted for by those found in tests of GMA. Given that rationale, it might serve to guide analyses of both the job's content and the knowledge required for success toward the discovery of overlooked abilities in the form of knowledge domains. Take for example the alternative ability called emotional intelligence (Mayer & Salovey, 1997). Emotional intelligence is defined as "the ability to perceive accurately, appraise, and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth" (Sternberg & Kaufman, 1998). Based on this definition, the development of emotional intelligence would be expected to rely very little on foundational knowledge but would be expected to relate to learning skills. It is also expected to relate in important ways to the successful performance of many jobs (Goleman, 1995). It would, therefore, be considered independent knowledge, and depending on the extent to which it forms an important part of a job's success, it

could be expected to add more incremental validity than, say, measures of working memory and information processing speed, which, upon reflection, could not realistically be expected to do anything but correlate significantly with either primitive abilities or foundational knowledge.

Whether or not the restructuring of the job knowledge construct and the search for job-relevant domains that do not rely on foundational knowledge actually produces alternative abilities that add significant incremental validity is, of course, an empirical one. Given the lack of success in finding such abilities, it is not clear whether or not such a strategy will prove fruitful. But the possibility is there, and it appears to offer a better rationale for unboweling such abilities in the form of IK domains.

The real basis, however, for asserting the efficacy of alternative abilities when viewed as job-relevant knowledge domains is the pivotal role of the experience construct as the critical mechanism for compensating for, and thereby mitigating the effects of, individual differences in primitive abilities and foundational knowledge. While more sophisticated theories of how expertise is acquired are being debated among cognitive psychologists, Cattell's (1971) investment theory of intelligence will suffice as the bases for explicating the experience mechanism under this modified Hunter-Schmidt model.

As with the job knowledge construct, the model splits the experience construct into two separate dimensions. The first dimension follows traditional notions of experience, which focus simply on the amount of time spent working in a particular field. This is true of both personnel psychology's view of job experience and cognitive psychology's view of expertise. The modified model retains this idea of tenure in a content domain, labeling it *time*. Like the traditional view of experience, it is uncorrelated with GMA but joins with GMA to influence the acquisition of both IK and DK. The second experience dimension, *quality*, is correlated with GMA. Both the set of primitive abilities and foundational knowledge are expected to promote the emergence of environmental opportunities and developmental skills that enhance the quality of one's experience while in the domain. That is, there are qualitative factors that enhance the development of expertise. If two people spend the same amount of time in a domain, the one whose experience includes those qualitative factors is expected to develop more expertise than one whose experience does not. At least some of those qualitative factors are expected to supervene from one's accomplishments in the domains measured by GMA (e.g., better schools, better job and training opportunities, access to the fast track, the improved likelihood that coaches and mentors will take that person under their wings). So rather than simply a function of how long one has been working in a domain, acquisition of expertise is regarded as a function of the combination of time and the quality of the experience during that time.

It is the individual differences in the way people choose to invest their GMA, the differences in the quality and tenure of the experiences they have, and the relevance of the resulting expertise relative to GMA that mitigates the relationship between GMA and job performance. To the extent that the job relies on IK and higher-level DK, GMA will exert a smaller influence on knowledge

acquisition. In terms of building a hierarchy of knowledge when developing expertise in different job-relevant domains, the higher up the domain, the more indirectly related it is to GMA. For example, it is recognized that as one moves up in the managerial ranks, successful performance relies less on basic technical skills and more on conceptual skills. Whereas a broad range of technical skills rely more on a smaller set of foundational skills, conceptual skills are less likely to rely on GMA and will require expertise in more diverse and more novel knowledge domains.

Additionally, within both IK and DK, there exists declarative and procedural knowledge as well as explicit and tacit knowledge. If it is true that traditional job knowledge tests measure predominately explicit, declarative knowledge, then we can expect to find incremental validity in fuller measures of job knowledge. Because tacit knowledge, which is considered to be predominately implicit and procedural, is not dependent on foundational knowledge, it forms a substantial part of the set of the IK domains. So rather than asserting the efficacy of tacit knowledge on the basis of its distinctness from GMA and traditional job knowledge, tacit knowledge can be held up as a set of relevant job knowledge domains, the mastery of which is relatively independent of one's foundational knowledge but yet crucial for successful job performance.

Framing tacit knowledge in this way frees proponents from having to identify what knowledge properly qualifies as tacit knowledge and that the (potentially) thousands or more peculiar knowledge domains that could be labeled "tacit" should all be considered to share the identical same relational properties vis-à-vis other constructs like GMA. For instance, if one tacit knowledge test for one occupation is shown to correlate nearly zero with GMA, it is still difficult to assert than any other tacit knowledge test (let alone all of them) would be expected to do the same. Measures of tacit knowledge are job specific. They are not like emotional intelligence, or even GMA, the measures of which can be used for pretty much any job. Measures of tacit knowledge are highly job specific. This does not make them bad measures. In fact, they are expected to be quite useful under this model. It is just not useful to appeal to soi-disant universal properties that are supposed to belong to all tacit knowledge measures. Such universal properties would be very difficult to establish. Instead, particular measures of tacit knowledge would be treated as any other job knowledge measure. A content analysis would demonstrate that the test does in fact measure relevant aspects of the job in question. The one difference would be that tacit knowledge measures would behave as measures of IK domains and, therefore, would be expected to add more to the prediction of job performance than would the more traditional measures representing the DK domains.

Again, tacit knowledge's efficacy would be based not in its appeal to general, content-free characteristics of all tacit knowledge measures. Its efficacy would be found in its content specific nature for the particular job or job families under consideration. We cannot simply make the claim that a particular job knowledge measure is measuring tacit knowledge, therefore, it is expected to possess greater predictive power. Its independence must be established within the context of the job for which it claims to be relevant. Tacit knowledge does not refer to its own general knowledge

domain comparable to those of alternative abilities like emotional or political intelligence. Tacit knowledge refers to thousands (if not millions) of specific knowledge domains that do not generalize across job families but, rather, apply narrowly and specifically to at most a small number of jobs.

PROPOSITIONS

The modified model suggests a number of propositions. First of all, the model essentially views the structure of tests of GMA as Cattell (1971) did in his investment theory of intelligence, with primitive abilities corresponding to Cattell's fluid intelligence and foundational knowledge corresponding to his crystallized intelligence. The difference is in the perspective. That is, the modified Hunter-Schmidt model casts off the term "intelligences" and all the baggage that goes with it in favor of notion that these skills represent various knowledge domains. But the distinction made by the terms "fluid" and "crystallized" intelligences is important for the understanding of how GMA translates into alternative abilities, here conceptualized as specific knowledge domains. To the extent that a job-relevant knowledge domain relies on foundational knowledge, it will be more highly correlated with GMA.

Proposition 1: *DK will correlate more highly with GMA than will IK.*

The knowledge one develops is a function of both the time he or she spends in the domain and the quality of that experience. Time will be independent of GMA, but quality will be influenced by it. Therefore, quality will mediate the effects of GMA on both DK and IK.

Proposition 2: *Quality of experience will correlate positively with GMA. Time will not correlate with GMA.*

Proposition 3: *Quality will mediate the relationship between GMA and both IK and DK.*

Next, the effects of experience on knowledge acquisition in terms of both time and quality will be positive. The more time one spends in the domain, the more knowledge he or she is expected to acquire. Similarly, the better the experience, the more knowledge acquired. As people become more heterogeneous in their experience, the less effect GMA will have. Experience will have the greater effect on knowledge development. However, to the extent that GMA does still exert some influence, it will have a greater impact on the acquisition of DK.

Proposition 4: *Time will have a direct positive effect on both DK and IK. Quality will have a direct positive effect on both DK and IK.*

Proposition 5: *The direct effect of experience (time and quality combined) on DK and IK will be greater than that of GMA.*

Proposition 6: *The direct effect of GMA will be stronger for DK than IK.*

Finally, keeping in mind that DK and IK indicate knowledge domains that are job relevant, the development of DK and IK lead to better job performance. GMA and experience combine to improve DK and IK. This is how GMA and experience translate into better job performance. Whereas experience's effect on job performance is manifested entirely through job knowledge, GMA still has some, but not much, influence on job performance. This, of course, assumes that DK and IK represent exhaustive sets of job-relevant knowledge domains, the identification and measurement of which may not actually be achieved in practice.

Proposition 7: *DK and IK will mediate the relationship between GMA and job performance.*

Proposition 8: *DK and IK will mediate the relationship between GMA and job performance.*

Proposition 9: *The direct effects of DK and IK on job performance will be stronger than that of GMA.*

CONCLUSION

The basis for asserting the efficacy of alternative abilities lies in their conceptualization not as representing cognitive processes but as knowledge domains, the mastery of which are essential to job performance but have heretofore gone unrecognized. It is well known and accepted by both proponents and opponents of what Sternberg and Wagner (1992) called the *g*-ocentric view of the world (i.e., the dominance of psychometric *g* or GMA) that when people are homogeneous in terms of their experience and job knowledge, GMA loses its predictive power. Most selection situations are of this type, and job knowledge is the key to predicting job performance in this case. GMA's influence is mitigated by experience, exerting its influence indirectly through factors that affect the quality of the experience and the extent to which foundational knowledge is related to knowledge acquisition in higher level domains. As demonstrated in novice-expert research, individual differences in experience in relevant domains can eventually nullify individual differences in GMA as important determinants of job performance. It is this mechanism that I think provides the best basis for asserting the efficacy of alternative abilities. Individual differences in an alternative ability

are actually individual differences in mastery or expertise in a knowledge domain and arise primarily from individual differences in the quality and amount of experience one has in that domain. To the extent that that domain is relevant to the job, those individual differences in expertise translate into related individual differences in job performance.

The primary implication for management is that concerted efforts must be made to study and try to understand what knowledge domains are important for successful job performance and of what those knowledge domains consist. Part of the reason standardized tests of GMA, as well as other psychological tests such as personality inventories, have enjoyed such widespread use is that they can be used off the shelf in any number of jobs without a lot of expensive, time-consuming job analysis. But, again, management must keep in mind that the superior predictive validity of GMA is conditional. When people are heterogeneous in their experience and job knowledge, those things are much better determinants of who will succeed than is GMA. What the model presented in this paper provides is a way for alternative abilities to be considered as viable predictors of job performance, when viewed as specialized and potentially job-relevant knowledge domains. That means that jobs must be studied more carefully to discern what skills and abilities might be important. Managers must think beyond the immediate task structure, which is what extant tests of job knowledge seem to be measuring, and explore alternative knowledge domains.

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ARE MALAYSIAN WOMEN INTERESTED IN FLEXIBLE WORKING ARRANGEMENTS AT WORKPLACE?

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ABSTRACT

Workplace reforms such as flexible working arrangements (FWAs) have been cited by researchers and policy makers as a possible tool to encourage more women to participate in paid labour. Little research has been done about what factors influence the uptake of flexible working arrangements among female employees in Malaysia.

To examine some socio-economic factors which may potentially have an effect on the uptake of FWAs, a field survey was conducted in this study among 319 female employees in selected services organisations. The study also sets to analyse whether other factors such as family responsibilities affect women's uptake of FWAs. It further examines whether female employees are interested in FWAs and finally, concludes with discussions on the implications of FWAs on work life balance and women's participation in the Malaysian labour force. A comparative analysis is done between female employees in companies which have implemented some form of FWAs and companies which have rigid working arrangements.

Findings suggest that both demographic factors and socio-economic factors influence the uptake of FWAs among female employees in Malaysia. The presence of young children in the family also has an influence on female employees' decision on the preference for FWAs.

Keywords – Flexible Working Arrangements, Female Labour Force Participation, Work Life Balance.

BACKGROUND OF STUDY

In the Malaysian development process, the introduction of the New Economic Policy in the early 1970s' saw a radical structural change from an import substitution industrialisation (ISI) to export oriented industrialisation (EOI). This paved the path for the emergence of a new labour force drawing on workers, especially young, unmarried women moving from cities to the rural areas. The

labour intensive multinationals, especially the electrical and electronics industries, saw an increase in female labour force participation from a mere 30% in 1970 to 47.8% by 1990. However, in the last two decades, female labour force participation rate has remained at a stagnant rate of 47% and had dropped to 45.5 % in 2008. This is in sharp contrast to the neighbouring South East Asian countries of Thailand, Singapore and Brunei Darussalam where the corresponding figures are 71%, 63% and 60%, respectively.

The UNDP Representative in Malaysia noted that "despite their high education and improved health status, Malaysian women are still under-represented in the job market with the female labour force participation rate remaining at approximately 47% throughout much of the past three decades" (UNESCAP, 2007). More specifically, flexible time and working arrangements were mentioned as workplace reforms and this call was further highlighted by the government in the Malaysian Women's Summit held in 2007. The main notion was to identify measures to encourage more Malaysian women to participate in paid work. Besides, lack of suitable childcare arrangements, rigid working time is commonly cited as a factor which deters re-entry of women into the labour force after a maternity break (Saw, 2007; Ariffin, 1996).

The labour force participation rate of women aged 20-29 years was about 60% in 2000, indicating that younger women are more likely to be economically active, on account of higher educational achievement. With a shift away from traditional occupations, the proportion of women who worked as unpaid family workers have been falling from around 40% in 1970 to 10% in 2000 where more than 75% of the women workers are now working as employees. Statistics also show that 42% of females outside the labour force have worked previously.

This increasing trend of women's participation in the labour force, particularly in the modern sector of the economy has various implications on women's work as well as their role in the family relating to childcare. To be able to juggle work and home, alternative working arrangements have become a necessity to ensure that work and family life does not become incompatible. This leads us to wonder whether more flexible working arrangements might be one method to help women and society reconcile paid work with social obligations.

A closer look at women's labour force participation in Malaysia does not reveal evidence that women are leaving the labour market in large numbers to become homemakers. The issue here is that women in the 30s', who have a minimum of 11 years of schooling and married, are leaving the labour market to become homemakers only to be displaced by foreign labour and the outsourcing industry.

The focus of this paper is to investigate what are the socio-economic factors which potentially affect the uptake of FWAs among female employees. The study also sets to analyse whether other factors such as family responsibilities affect women's uptake of FWAs. It further examines whether female employees are interested in FWAs and finally, concludes with discussions on the implications of FWAs on work life balance and women's participation in the Malaysian labour force.

In this paper, we present the Literature Review in Section 2 and the survey details in Section 3. Findings and discussion have been presented in Section 4 followed by statistical analysis in Section 5. Finally, conclusion and policy implications are presented in Section 6.

LITERATURE REVIEW

Women in Malaysian Labour Market

As early as 1970, women in Malaysia accounted for 40% of the plantation workers which accounted for 16% of the agricultural labour force (Boserup, 1970). Agriculture continued to be the mainstay of the economy until the introduction of the New Economic Policy in 1970. The spill over effect of supply side factors such as more job opportunities as well as demand factors such as increasing enthusiasm (Boserup, 1970), increasing educational achievement (Siti Rohani Yahya, 2009) and change in attitude (Ariffin, 2009) resulted in an increase in women's participation in the labour force. Early studies of women in Malaysia by Hirschman & Aghajanian (1980), Ariffin (1982) and Jones (1984), highlighted women in the manufacturing sector doing assembly line jobs which were repetitive, monotonous, unskilled and low paid.

However, after the early phase of industrialisation, other countries (such as Indonesia, China and India) were able to use even cheaper sources of labour and the rapid industrialisation of Malaysia soon created a tighter labour market which resulted in rising wages. In response to this structural change, industries moved to higher skilled and higher paid operations. Their demand for labour continued to grow but it increasingly moved away from low skilled workers doing menial and repetitive tasks to higher educated workers using more capital intensive methods. Malaysian workers have been able to adapt to this change, and the country's generally good education system has helped this situation. This eventually created a labour market where low skilled work has been done more and more by expatriate labour, for example, in construction and domestic work.

While the manufacturing sector became the leading sector in terms of employment between 1970 and 1980, it also was the largest sector in terms of job creation between 1985 and 1995 (Manning, 1977; Jomo and Vijayakumari, 1999). However, in the last decade, the services sector played a more important role in both male and female employment and has taken the lead to become the biggest employer of women in the labour force. Hence, female labour force participation was duly affected by the shift in the Malaysian government's policy decision on the services sector from an industrial labour intensive manufacturing strategy of the 1970s and 1980s to knowledge and service based economy in the 1990s and beyond.

This gives rise to one aspect of the study, namely can or should employers seek to offer more favourable and flexible working conditions to Malaysian women rather than seeking workers from across the border?

Flexible Working Arrangements (FWAs) in Malaysia

Flexible working arrangements is about people having the opportunity to make changes to the hours they work (over a day, a week or over the year), the times they work or where they work. It is also about how careers are organised, how transitions in and out of work are managed, and how flexible work is managed in the workplace so that employees and businesses benefit. Examples of quality flexible work include varying starting and finishing time; annualised hours or term time working; part-time working; working from home or tele-working; job sharing; selecting or influencing own rosters or shifts; flexible break provisions and flexible leave/time off provisions, both paid and unpaid (Department of Labour, New Zealand, 2006).

In Malaysia and other Asian countries, there is a tendency for married women to leave employment upon marriage and birth of children (Kaur, 2004). Inflexibility at work place and home places a lot of stress on the women and the family especially for most women who put home as their main responsibility (Hill et al 2004). Statistics show that 58.1% of the country's working women are married and hold dual roles (Malaysia, 2006). The issue of employing domestic helpers is of great concern in Malaysia which relies heavily on neighbouring countries such as Indonesia, Philippines and Sri Lanka. Out of 2.5 million foreign workers in Malaysia in 2007, 160,000 were domestic helpers.

Even though flexible working arrangements is a more common phenomenon in the western countries compared to Asian countries, some countries such as Hong Kong practice it to relieve traffic congestion. As a consequence it results in a better working spirit and work performance among employees (Hau & Chew, 2006). Malaysia's female literacy rate has increased from 64.7% in 1980 to 88.1% in 2004 (Malaysia, 2007) and majority of them have a minimum of eleven years of education Hence, it would be interesting to examine the impact of flexible working arrangements on the educated pool. This would also throw light on their ability to juggle work and home.

Studies have shown that "spending time with family" was one of the main reasons cited by women who stopped working (Cole, 2006). Despite work life reflecting a more widely shared and inclusive set of issues, childcare and elderly care nonetheless tend to be the responsibility of the women. For example, it was found that the decline in the participation of women in the labour force in the United States was concentrated among highly educated married women with young children (Hotchkiss, 2006). Flexible working arrangements such as flexi time and part time may provide married women with young children who require the greatest parental time, to balance work and home (Hill et al, 2004).

Government policies and good corporate social responsibilities practices include achieving an ideal work life balance. At policy level, the Malaysian government is officially committed to gender equality as articulated in the National Government five year plans, especially the present one. This calls for a solution which is already being practiced widely in developed countries for several decades quite successfully (Liddicott, 2003). While countries such as United Kingdom, Europe,

United States, Australia and New Zealand have been incorporating workplace flexibility for a very long time, this working arrangement is new in the Malaysian working environment. The government agencies and a few multinational corporations have implemented flexi work time but this is still at the infancy stage.

As Osnowitz (2005) shows that job flexibility allows women to manage working time and household responsibilities, it also "reinforces conventional constructions of gender". Sometimes flexible working arrangements such as part time work and working from the home is carried out at the expense of marginalisation of women in terms of career prospects and discrimination. However, the fact remains that inflexibility at work place and inability to balance work life and home career are important factors why married women leave the labour force (Kaur, 2004).

Recent trend studies show that the new concept part-time work influences the ability of mothers with young children to balance work and family responsibilities (Jeffrey, et al 2004). As Pacilli (2008) argues, mothers will be less likely to leave the labour market if more part time jobs are available. This concept of part time jobs and family friendly policies such as flexible working arrangements will enable more women to contribute to both work and home. With more flexible work and part time work, literature suggests that possible benefits for these young mothers will be better monitoring of the children and more quality time with the children.

Hirschman (2007) further reiterates that at the workplace, they are "perpetuating a mostly male ruling class"—precisely the type unlikely to help make the case for more flexible work arrangements that would allow more women back into the workforce. The result is disempowering for less-well-off women, who have fewer public female role models, and for the opt-outers themselves, who find it hard to re-enter the work place and, if divorced, may have to depend on their husbands for support.

The existing literature tells a few conclusions that can be drawn. Firstly, industrialisation in Malaysia has to a certain extent exploited women who end up in the lower rung of the production process. Secondly, in the Malaysian setting, the present labour market issues of concern include a big and growing foreign labour market, outsourcing and a market for foreign domestic helpers. Thirdly, the process of industrialisation has increased the standard of living of society and caused a demand from low skilled work to high skilled and educated labour force. Finally and most importantly, studies in Malaysia and other parts of the world have shown that flexible working arrangements are beneficial to both employers and employees.

In Malaysia, there appears to be an increasing demand for educated and skilled labour and at the same time a possible supply of labour among educated women. However, not much has been researched on this area. The questions to be explored in this study are whether Malaysian women are interested in work arrangements which are flexible? And who are these women who are interested in the uptake of FWAs?

In Malaysia, the percentage of women in the services sector has shown an upward trend in the last decade and hence the working environment in the services sector needs to be re-examined.

As this study intends to examine whether workplace flexibility may have an impact on women's increase in participation, the scope was thus limited to the services sector.

THE STUDY

The survey was conducted among women who were in paid work in selected organisations. Firstly, a list of companies in the services sector which have flexible working arrangements was prepared based on internet search, interviews and information provided by the Malaysian Employers Federation. The organisations were sub-grouped further into organisations which were identified from the Finance, Logistics, Petroleum Shared Services and professional sub-sectors.

Using the purposing sampling technique, a total of 4 organisations which have flexible working arrangements were identified in the Klang Valley. Using the comparative method approach (Lijphart, 1971) the corresponding 4 organisations which have conventional working arrangements were identified at random. To reduce selection bias, random sampling was done within each organisation where the women employees were selected at random by the Human Resource Manager.

For this survey, 400 questionnaires were distributed, 200 to FWA organisations and 200 to non FWA organisations. However, the response rate was slightly lower for the non-FWA and the response rate from FWA were higher with the final respondents from FWA constituting 56% and from non-FWA constituting 44% of the sample size of 329.

The area of research is the services sector and is limited to organisations located in the Klang Valley. The Klang Valley in Malaysia is an area comprising Kuala Lumpur and its suburbs, and adjoining cities and towns in the state of Selangor. This is where the central business region of the country and the capital of Kuala Lumpur are located. This conurbation has a total population of over 7 million as of 2009 and is the heartland of Malaysia's industry and commerce. The Klang Valley is home to a large number of migrants from other states within Malaysia and foreign workers largely from neighbouring Asian countries.

The questionnaire consisted of 4 parts: Part A consisted of 5 items on the demographic profile of the respondents. Part B consisted of 2 items on the income level; Part C consisted of 3 items on family responsibilities and Part D consisted of 3 questions to assess the decision making of women's exit from the labour market.

Statistical tools such as SPSS 16, were used to analyse the data. Descriptive statistics were used to provide adequate scope for drawing logical conclusions on the factors which influence women's uptake of FWA. Descriptive statistics and cross tabulations were also used to further analyse whether women employees were interested in FWA at the workplace. Correlation analysis was used to see whether demographic factors, economic factors and family responsibilities had any significant influence on women's decision making behaviour.

FINDINGS AND DISCUSSION

As a group, the women who participated in this study have maintained a middle class lifestyle, highly educated and holding a degree, and most of them had at least two children. The tables below summarise the findings with a discussion based on a field survey.

The demographics of the respondents, such as age, educational level and marital status are important determinants which influence the working arrangements the employees would prefer. Table 1 below shows the age profile of the respondents in the study. A majority (46%) of the respondents were in the age group of 20 - 29 years, while nearly 40% were women who are in the 30 - 39 years age group. The age group portrayed in this sample size reveals the trend of the female labour force participation in Malaysia. Further analysis showed that majority of the women in the 20 - 29 years age group were single women.

Table 1 – Age Profile

1	Age	Frequency	Percentage (%)
	20-29	149	45.8
	30-39	128	39.4
	40-49	38	11.7
	50-59	10	3.1
	Total	325	100.0

Table 2 shows that more than 60% of the respondents were married women and out of this sample, 83% of them have children. 17% of them were in the 20 - 29 year age group and have no children yet.

Table 2 – Marital Status

2.	Marital Status	Frequency	Percentage (%)
	Married	204	62.0
	Single	125	38.0
	Total	329	100.0

Table 3 shows that all the respondents have a minimum of eleven years of schooling and more notably, nearly half (46%) of the women in the study hold a basic bachelor's degree.

Table 3 – Highest Educational Level Achieved			
3	Highest Educational Level Achieved	Frequency	Percentage (%)
	SPM / "O" Levels	72	21.9
	STPM/ "A" Levels	20	6.1
	Diploma	83	25.2
	Degree	133	40.4
	Post graduate	21	6.4
	Total	329	100.0

From Table 4, we note that more than 50% of the respondents in this study are at the executives or officers level and 12% are at the middle management level. This speaks well for women and shows that women are interested to work and shoulder responsibilities at the work place, given the chance. However, a closer look shows that less than 1% are in the senior management level. This could be due to an issue of work-life balance or a glass ceiling.

Table 4 – Occupational Level			
4.	Occupational Level	Frequency	Percentage (%)
	Senior management	2	0.6
	Middle management	39	12.0
	Executives/officers	167	51.5
	Clerical level	86	26.5
	Technicians/assistants	17	5.2
	Others	13	4.0
	Total	324	100.0

Malaysia is a country where culture plays an important role in family and society. In terms of ethnicity, there are three major groups, the Malays who comprise 57% of the population, followed by the Chinese (30%) and the Indians (10%). There is a small minority of others comprising Sri Lankans, Eurasians, Indonesians etc. More than 50% of the sample consists of Malays, followed by Chinese and Indians and a very small minority of Eurasians. This generally reflects the population distribution of the country.

Table 5 – Ethnicity			
5	Ethnicity	Frequency	Percentage (%)
	Malay	175	53.4
	Chinese	77	23.5
	Indian	66	20.1
	Others	10	3.0
	Total	328	100.0

More than 90% of the respondents originated from the urban sector and are also residing in the urban sector. Whether the respondents originate from the urban sector plays an important role in the background thinking and culture of the respondents.

Table 6 – Place of Birth			
6.	Place of Birth	Frequency	Percentage (%)
	Urban	295	90
	Rural	33	10
	Total	328	100

As can be seen from Table 7, even though a majority of the respondents were in the executive level, more than 40% of them earned below RM2000. This conforms to the income scenario in Malaysia where a major 40% of the population earn below RM 3000. However, it is encouraging to note that about 19% of them are earning more than RM5000.

Table 7 – Personal Income			
7.	Personal Income	Frequency	Percentage (%)
	RM 100 RM1000 – RM2000	134	42.0
	RM2001 - RM3000	74	23.2
	RM3001- RM4000	30	9.4
	RM4001- RM5000	16	5.0
	RM5001- RM7000	28	8.8
	Above RM7000	37	11.6
	Total	319	100.0

The corresponding family expenditure also commensurate with the low income earned by the respondents. A majority (60%) of the respondents were in the lowest expenditure category and this could be possibly explained by their low income.

Table 8 – Average Family Expenditure

8.	Average Family Expenditure	Frequency	Percentage (%)
	RM1000 - RM2000	185	59.9
	RM2001 - RM3000	66	21.4
	RM3001- RM4000	22	7.0
	RM4001- RM5000	21	6.8
	RM5001- RM7000	7	2.3
	Above RM7000	8	2.6
	Total	309	100.0

Table 9 – Family Responsibilities

9.	Variable	Frequency	Percentage (%)
	No of Children		
	0	59	27.3
	1-2	109	50.4
	3-4	41	19.0
	5-6	6	2.8
	7-8	1	0.5
	Total	216	100.0
	No of Children Below 5 Years		
	1 Child	71	71.9
	2 Children	21	21.0
	3 Children	7	7.1
	Total	99	100.0
	Take care of Elderly Parents		
	Yes	157	47.7
	No	172	52.3
	Total	329	100.0

Table 9 shows that 83% of the married women had children. In fact, 50% of them had at least two children. Whether women work or not, studies have shown that women's time spent on family work is significantly affected by the size of household, having children under three or not, and number of children (Chiu, 1999). Table 9 also shows that a big majority (72%) of the respondents have at least one child below 5 years old. It was also noted that a big 48% of the respondents have to take care of their elderly parents.

The main objective of this study was to find out whether women are interested in flexible working arrangements and whether this mode of working arrangement will have an effect on female labour force participation. Women employees from organisations with flexible working arrangements and standard working arrangements were asked the simple question "whether they are interested in flexible working arrangements at their workplace? Prior to this question, there was a statement in the questionnaire which first explained the definition and types of flexible working arrangements.

As Table 10 shows, 86 % of the respondents were interested in FWA at their workplace.

Table10 – Interested in Flexible Working Arrangements (FWA)

10.	Variable	Frequency	Percentage (%)
	Interested in FWA		
	Yes	284	86.3
	No	45	13.7
	Total	329	100.0

STATISTICAL ANALYSIS

A Bivariate correlation analysis was done to examine whether the demographic factors, socio-economic factors and family responsibilities had an influence on the uptake of FWA among women employees in the selected organisations.

The correlation reported in Table 11 below shows that there is a positive relationship between uptake of FWA and age, educational level and ethnicity. As for the age variable, results show that older women seem to be more interested in FWA. Further cross tabulation analysis shows that women in the 30 - 39 years age group and 50 - 59 years age group are more interested in FWA. This could possibly mean that younger women are more career oriented and do not mind working under any circumstances. On the other hand, women in the 30 - 39 years age group, are the ones who have childcare responsibilities and possibly need FWA.

Women who have a higher educational level and a higher occupational level show a positive correlation with the uptake of FWA. The relationship here is statistically significant suggesting that

women who are in the higher rank are more confident and are possibly more aware of the benefits of FWA. A further cross tabulation revealed that women who have minimum, a degree and who are in the middle and senior management category are more interested in FWA. As for the ethnicity, among the three dominant races in Malaysia, there does not seem to be any difference in their interest though cross tabulation showed that the Chinese seem to be more interested in FWA compared to Malays and Indians.

Table 11 - Demographic Variables and Cultural Factors

Variables	Age	Marital Status	Highest Educational Level	Occupational Level	Ethnicity
Interested in FWA	.003 .956	-.009 .870	0.172** 0.002	-0.170** 0.02	.060 .274

** Correlation is significant at the 0.01 level (2-tailed).

A similar test was carried out to examine whether economic factors and family responsibilities had an influence on the uptake of FWA among women employees. As can be seen in Table 12, income and average family expenditure show a positive relationship with the uptake of FWA which is also statistically significant. This means that women who are at a higher level of income and also spend more are more interested in FWA, possibly because there might already be some form of flexibility at that stage. This goes in tandem with the educational level and the occupational level.

This positive relationship is also noticed among women who have young children and elderly care responsibilities who seem to be more interested in FWA. However, in this study family responsibilities such as taking care of young children and elderly parents do not seem to have a significant relationship on the women employees' uptake of FWA at the work place.

Table 12 – Economic Factors and Family Responsibilities

Variables	Personal Income	Family Expenditure	Children Below 5 years	Elderly Parents
Interested in FWA	.195** 0.000	.126* .022	.016 .775	.027 .625

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Based on the above analysis, more than 85% of the women are interested in FWA at the workplace. It was found that the older women, who are more educated and in the higher management level, earning a higher income are more interested in the uptake of FWA.

CONCLUSION & POLICY RECOMMENDATIONS

Overall, findings from this study indicate that older women who are more educated and earn a higher income are more interested in FWA at the workplace. Women who have young children and are in their 30s are also the ones who are more interested in FWA Although the results show that women with family responsibilities are more interested in FWA, but it does not seem to be statistically significant.

About 86% of the respondents were interested in FWAs and more than 70% of them have not used any form of FWAs before. Most of them were interested in flexi time and working from the home compared to tele-working and part time work. The concept of part time work in Malaysia is often misunderstood as casual work and as a result employees are not too keen in this form of FWA.

Although findings of this study has several notable contributions which are relevant for the current debate whereby we can draw logical conclusions and tap the potential of our own human resources, several issues remain. Some limitations inherent in the research should be addressed. Firstly, being a preliminary study at only a micro level, the sample size could be increased to represent the whole of Malaysia. Secondly, the scope of this could be enlarged to include the rural sector as this study only concentrates on the urban sector in Malaysia. Finally, the main objective of this study was to examine whether women in the services sector are interested in the uptake of FWA. This can be expanded to examine the condition in the manufacturing sector.

The results of this study are advantageous to policy makers, employers and employees. It was found that the decline in the participation of women in the labour force in the United States was concentrated among highly educated married women with young children. This was also the main reason why Malaysian women left the labour force. The nuclear family with a full-time mother managing the home has been transformed and this requires more crèches or childcare facilities which are affordable. Therefore, reliable. related social policies such as childcare, care giving for the elderly, and income support may be critical to women's labour participation in the future.

As more families end up as dual career families in Malaysia, childcare and elderly care needs and family friendly policies are very pertinent in the economy. Families that have two streams of income are now considered the norm, and as parents and children construct their socialising together, they want to spend more time together. In a gendered division of labour society, it is always the responsibility for a career woman to sacrifice her career to take care of the home. Flexible working time and part time may provide married women with young children who require the greatest parental time, to balance work and home.

This gives rise to some underlying issues which is of great concern and needs immediate action:

Firstly, should employers in Malaysia seek to offer more favourable and flexible working conditions to Malaysian women rather than seek workers from other countries.

Secondly, Malaysia currently stands as the third largest nation in the world for outsourcing and should look into the possibility of utilising the potential of its own human resources in certain sectors such as IT related industries, small businesses and publishing and printing industries. In the survey, it was found that many of the women would like to work in small organisations by working from the home or working flexi time. So, wouldn't women fit in well for these jobs?

Thirdly, despite efforts made by the Government, few employers (government agencies included) provide childcare facilities and fewer still are willing today to retain positions for women who take leave in excess of their entitlement, let alone ensuring that their seniority is ensured. As women try to juggle both the reproductive and non-reproductive roles, many working women have created a high demand for foreign domestic workers over the last two decades to take over the non-economic roles. Doesn't this mean that Malaysian women are interested to work in paid labour?

Finally, while the Ministry of Human Resources is encouraging the private sector to implement flexible working arrangements and part time work, many employers are actually not cooperating to the call of the Ministry. Further follow up measures need to be taken by the Government to ensure the implementation of FWA by the private sector.

Working arrangements which are more family friendly might be one method to help women and society reconcile paid work with social obligations and allow women to continue participating in the labour force.

The support by Malaysia's present Prime Minister to review the Employment Act 1955 to include flexible work hours for the female labour force is testimony that Malaysia accepts that the concept of the workplace now is different from what it was in 1955. Besides the issue of bringing more women into the workplace has become "not a choice but a necessity" for both economic development and global competition. This notion brings out clearly that Malaysia is in the right direction towards FWA and increasing its female labour force participation but the measures need to be more vigorous.

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